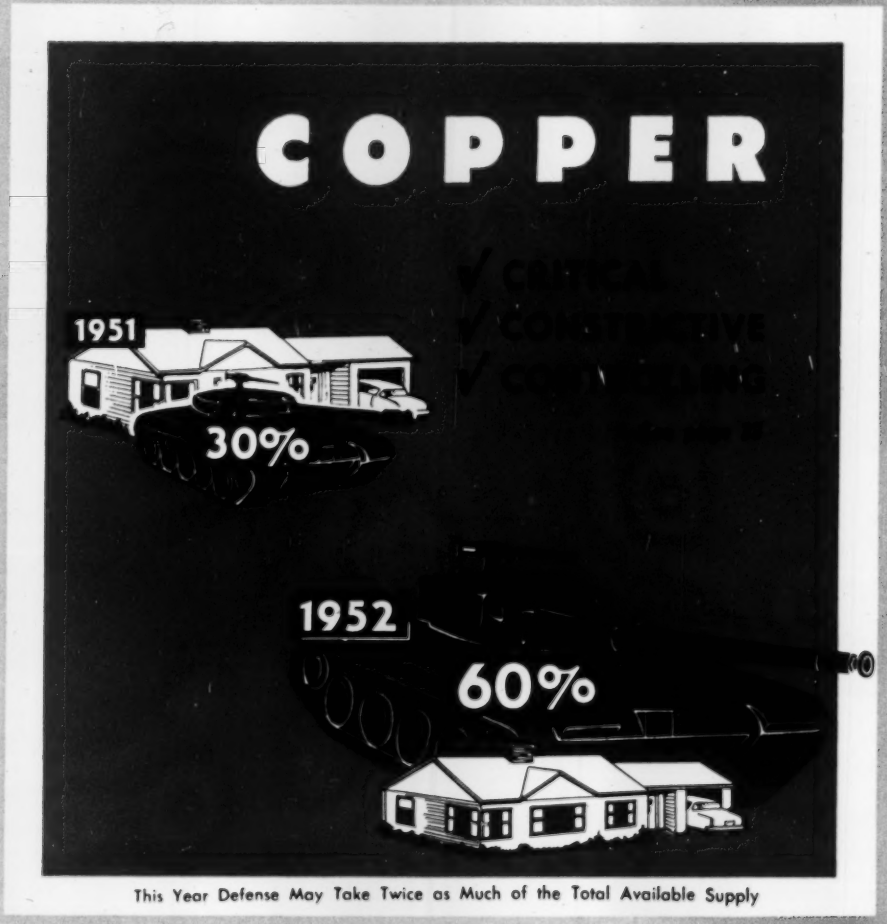
JANUARY 21, 1952

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



This Year Defense May Take Twice as Much of the Total Available Supply

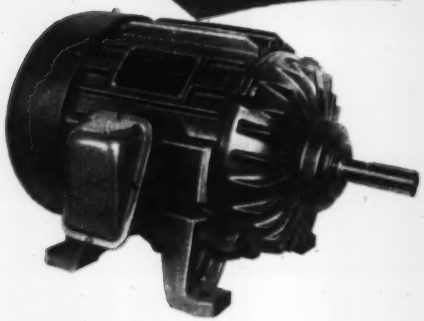
COMMERCIAL RESEARCH
—The Labs Will Hum This Year, p. 43

AIRLESS BLAST CLEANING
—Equipment Selection Best by Test, p. 64

COOLER CUTTING TEMPERATURES
—Jet Stream Lengthens Tool Life, p. 70

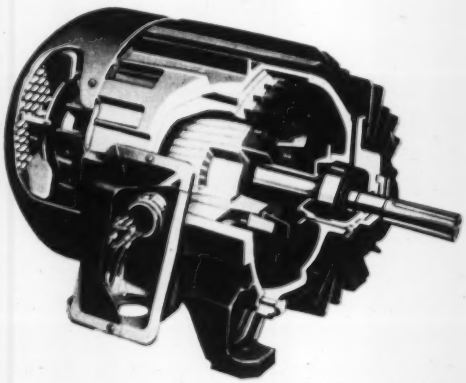
Totally-Enclosed Fan-Cooled

Look Outside



Greatly increased radiating area means greater cooling efficiency. More important, cooling efficiency stays high, regardless of operating conditions. There are no enclosed external air passages to clog and cause overheating. If oily dirt sticks, just wipe or blow it off. No matter how bad operating conditions are, this motor can be easily kept clean and cool running. Electrical parts are protected against corrosive atmospheres by cast iron yokes and end housings.

Look Inside



Double-shielded, heavy-duty ball bearings require no maintenance in ordinary service under most conditions. However, they can be lubricated without disassembly if required. Double shielding prevents over-lubrication, leading cause of bearing trouble. Rotating seals, where shaft extends through housings, keep dirt and moisture out of bearing chambers. Die cast rotor and interphase insulation are further assurance of long life and low maintenance.

See WHY THIS IS YOUR BEST MOTOR BUY

HERE IS A MOTOR that is different from conventional TEFC motors; built with an entirely different cooling system that gives you big savings in lower maintenance, more continuous service and less trouble in the toughest locations. Clogging can easily be prevented in the Allis-Chalmers Type APZ TEFC motor since areas that might collect dirt are exposed and easy to clean.

GET DETAILS NOW — *Ask your nearby Allis-Chalmers Authorized Distributor or District Office for more complete information on this high performance TEFC motor. Or write direct to Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 51B7225.* A-2378

Texrope and Vari-Pitch are Allis-Chalmers trademarks.

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Serviced . . .

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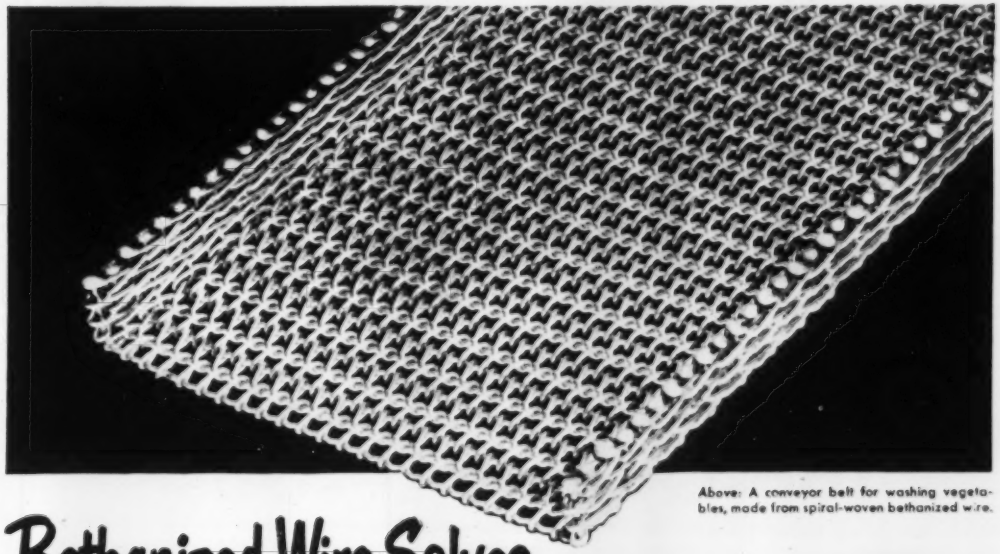
CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

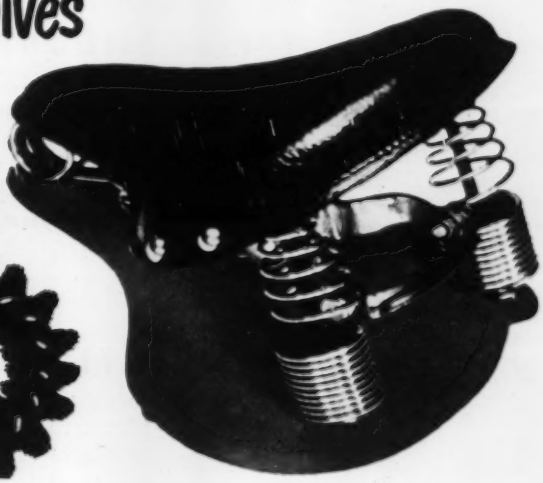
PUMPS — Integral motor and coupled types from ¾ in. to 72 in. discharge and up.

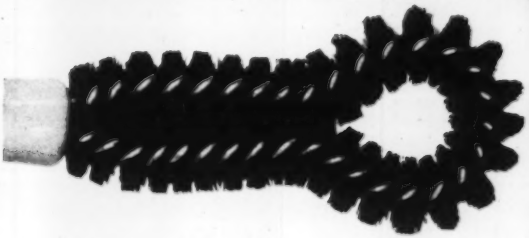
ALLIS-CHALMERS



Above: A conveyor belt for washing vegetables, made from spiral-woven bethanized wire.

Bethanized Wire Solves Forming and Corrosion Problems





More and more manufacturers, whether they make chain-link fence or brush handles, are recognizing the value and versatility of bethanized wire.

We're picturing here just a few of the tough assignments in which bethanized wire is doing a good job. Each application requires a corrosion-resistant coating and an ability to withstand severe forming.

In each case the bethanized coating is meeting every requirement. The pure, ductile zinc armor comes through the forming operations without cracking, flaking or peeling off. It's a smooth, uniform coating that can take a lot of punishment and still fight off rust.

Whether you need hard- or soft-temper wire, standard or heavy zinc coatings, we'd like to show you how bethanized wire can add sales appeal to your products. The nearest Bethlehem sales office will give prompt attention to your request for facts.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

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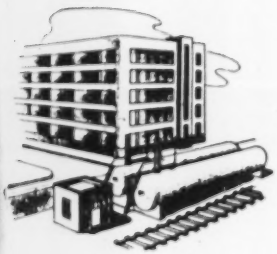
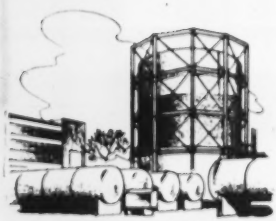


FOR INDUSTRIES

Leading industries use Phillips *66* Philgas successfully for heat treating, mold drying, core baking, ceramic firing and many, many other operations. Automatic Philgas systems assure constant furnace temperatures and atmospheres; constant pressures, high or low.



FOR UTILITIES

Many progressive utilities use Phillips *66* Philgas to augment natural or manufactured gas. High-quality Philgas is uniform in thermal value and gravity, and is free from harmful contaminants. Automatic operation cuts down on overhead.

*Philgas is the Phillips Petroleum Company brand name for its high quality propane-butane LP-Gas or bottled gas.

Phillips 66

PHILLIPS PETROLEUM COMPANY

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Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Pontiac, Mich., Indianapolis, Ind., Kansas City, Mo., Milwaukee, Wis., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tulsa, Okla., Wichita, Kan.

Only with B. F. Goodrich grommet belts can you make these savings!

Save 3 ways! Investigate today! Write or mail coupon

You save belt costs because belts last longer, save production costs because machines keep running with fewer interruptions, save maintenance costs because they need less attention.

Patented grommet belts by B. F. Goodrich represent the only basic change since invention of the V belt. Belts last 20 to 50 per cent longer, depending on service. (The more severe the service, the greater the increase over ordinary belts.) Grommet belts have more rubber; they're more flexible, give better grip, less slip.

What is a grommet?

A grommet is like a giant cable except that it's *endless*—a cord loop built up by winding heavy cord on itself. There is no overlapping cord *section* as in all ordinary belts. Most belt failures occur in these sections where cords overlap!

All cords put to work

Each of the two grommets and every part of a grommet carry their share of the load. In ordinary belts under high tension the center cords "dish" because tension is greater near the driving faces. Dished cords are doing less work, not pulling their share. Grommet belts have no center cords, there is no dishing—therefore much more strength in proportion to cord volume—and less stretch. Grommet belts stretch, on an average, only about one-third as much as ordinary belts.

Better grip, less slip

Grommet belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give ⅓ more gripping power, pull heavier loads with a higher safety factor. Because there is less slip, there is also less surface wear.

Send for proof

Send the coupon for a set of reports telling users' experiences and showing actual installations where grommet belts outlasted all others. Some typical cases:

". . . within a few days ordinary belts had stretched . . . After six months of 24-hour-a-day service BFG grommet belts haven't stretched at all . . ."

"Ordinary belts lasted only 5 or 6 weeks . . . B. F. Goodrich grommet belts are in their sixth month of service . . ."

"Previous belts suffered from shock loads, wore out fast . . . BFG grommet belts have been in service 2 years with no shut-downs . . ."

There are hundreds of cases like these.

They cost no more

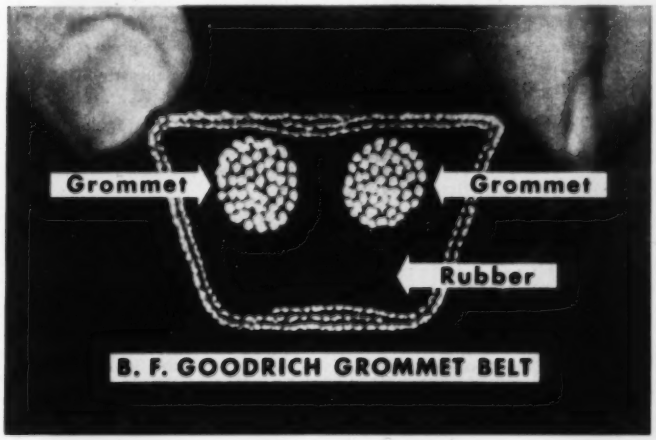
BFG grommet belts cost not one cent more than others. The savings they make for you are clear profit. They are made in C, D and E sections. They are patented by B. F. Goodrich. No other V belt is a grommet belt (U. S. Patent No. 2,233,294).

Write, send the coupon or see your B. F. Goodrich distributor. (He will show you his "X-ray" belt that shows the grommet construction clearly.)

Grommet V Belts BY

B.F.Goodrich

FIRST IN RUBBER



The B. F. Goodrich Company
Dept. S-1
Akron, Ohio

☐ Send set of reports telling users' experiences and showing actual installations proving that B. F. Goodrich grommet belts outlast all others.

☐ Have distributor show me the "X-ray" belt that shows how B. F. Goodrich grommet belts are made.

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STEEL
The Weekly Magazine of Metalworking

VOL 130 NO. 3 JANUARY 21, 1952

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Editorial and Business Staff—Page 10. Advertising Index—Page 130. Editorial index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

Next Week ... **Phosphatizing—Versatile Substitute for Metallic Coatings ... Spot Testing Aluminum Alloys ... How to Get More Out of Resistance Welding Control ... Desulphurization—Worth Watching**

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $20. Single copies (current issues) 50 cents. Metalworking Yearbook issue $2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1952 by Penton Publishing Co.

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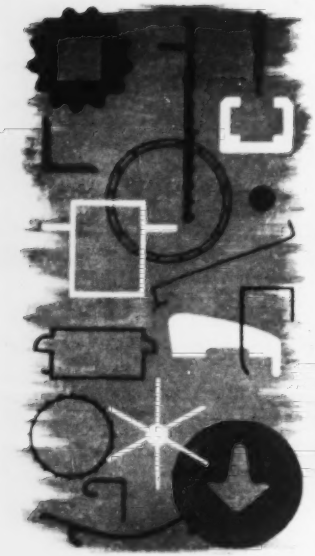

A profile of WERNER Aluminum Services

To the prime contractor who needs help *now*, Werner's extensive manufacturing and production facilities invite careful investigation as your dependable production source.

Two strategically located Werner high-capacity plants are currently servicing nationally known prime contractors*.

A highly skilled, personalized service; direct teletype lines, and excellent forwarding facilities will expedite your order for:

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* Names on request

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Behind the Scenes...

Scrap Committee

The accompanying photograph shows some of the gentlemen who are trying to alleviate the critical scrap shortage.

Seated, left to right, are: Manly Fleischmann, DPA administrator; Charles E. Wilson, director of defense mobilization; and Irwin Such, STEEL's editor and chairman of the NPA Business Press Advisory Committee on Scrap. Standing, left to right: Edward W. Greb, director, Salvage Division, NPA; Tom C. Campbell, editor of *Iron Age* and a member of the business press committee; Edward K. Moss, assistant administrator for public information, DPA-NPA; Burnham Finney, editor, *American Machinist*; and Robert Warner, special assistant to the administrator in charge of salvage operations, DPA-NPA.

The picture was taken in December at a meeting chairmanned by Irwin Such of leading business magazine editors and top defense officials. Purpose was to discuss the scrap shortage and what the business press can do to relieve the problem.

At that December and other meetings, the committee worked up a program for business papers to outline the seriousness of the situation in their pages. Which reminds us, if you have any scrap lying around, get it to your scrap dealer now.

The Evils of Drink, Smoke etc.

The Human Engineering Foundation, Summit, N. J., has caught us again. Fenton Publishing Co., publisher of STEEL, recently ran an ad pointing out the expected growth of the metalworking industry in the 1950s. Three cartoons were run to help illustrate the points and one cartoon innocently depicted a man smoking. The foundation immediately took us to task, called the drawing of a cigar-smoking man "a controversial and irritating picture that should forever be avoided."

The foundation's mission is to urge advertisers to "help advertise and demonstrate a new and better way of life by avoiding all reference to, and the use of, tobacco, liquor, coffee, tea and colas."

On the one hand, we have severe censure of such products, but on the other we have nothing but praise, at least of coffee. Fact Finders Associates for the Pan-American Coffee Bureau has surveyed 1160 companies in 45 states and finds that sanctioned coffee breaks have become a force "for good morale, better production and savings in labor and materials." We are informed that coffee breaks in 22 per cent of the companies are required under union contracts.

When Is Nickel Made of Steel?

The Canadians are making a nickel out of steel. A new five-cent coin for the dominion will be produced from cold-rolled strip steel. Stanley Steel Co. Ltd., Hamilton, Ont., is supplying the strip to the Royal Canadian Mint at Ottawa. The Stanley people just sent us two sample coins. They are 12-edged pieces about the size of the U. S. Nickel.

Juvenile Literature

Well, the U. S. government has done it—invaded the juvenile literature field, we mean. They have published a myriad of periodicals of advice and admonition for adults; now comes one for the kiddies entitled "Bert the Turtle Says Duck and Cover." The title struck us as funny until we read what the booklet is all about. It contains instruction for school children on various phases of protection against atomic attack.

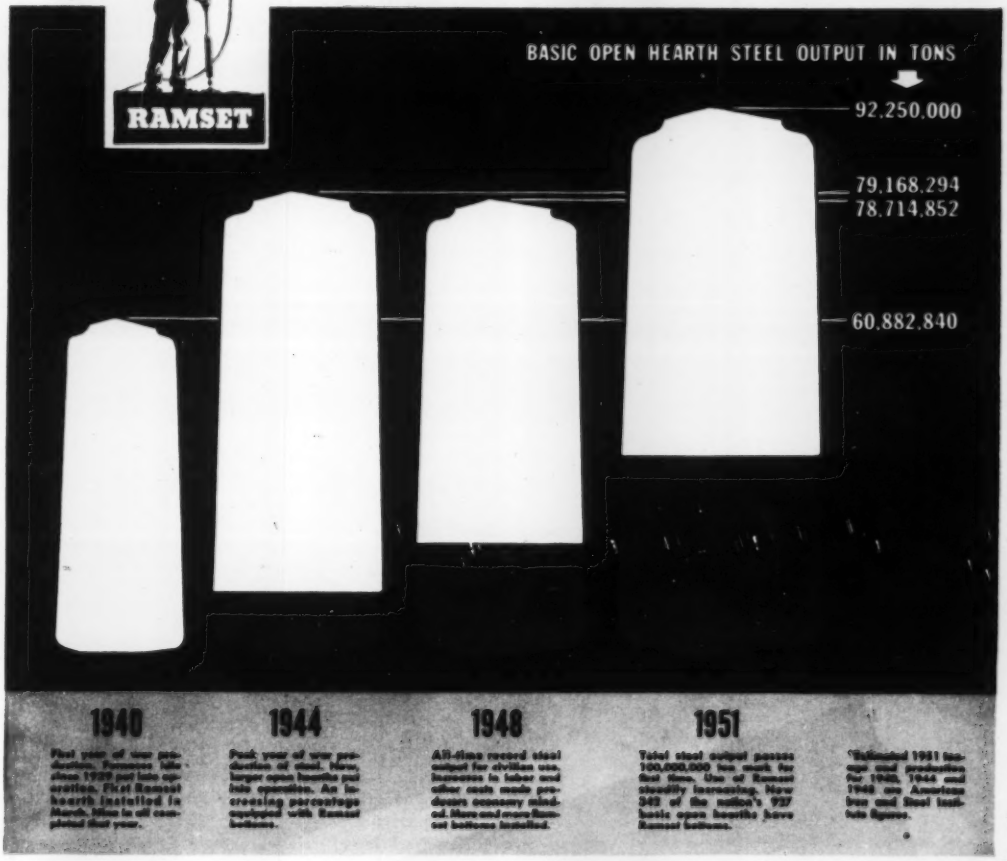
Puzzle Corner

No puzzle last week, but here's the one for today: A Grand Rapids factory makes six kinds of bedroom suites, whose prices are $231, $273, $429, $600.60, $1,001, and $1,501.50. A buyer placed an order that totaled $13,519.90. How many of each kind of suite did he order?

Shrdlu

(Metalworking Outlook—Page 25)

GROWTH OF A GOOD IDEA



STEEL production has nearly doubled since 1940, yet the number of open hearth furnaces has actually dropped. Larger capacities of the newer furnaces tell only part of the story. A major factor has been increased efficiency in the use of existing equipment.

Basic Refractories is proud to have contributed to this increased efficiency through the development of Ramset. Introduced in 1940 the use of this magnesia ramming mix has steadily increased until now over a third of all basic open hearths have Ramset bottoms.

There are three principal reasons why more and more rammed hearths are in use: (1) The refractory itself is right for the job—constantly improved through Basic research with the cooperation of practical steel makers; (2) Ramset rammed hearths save time, fuel, labor and brickwork compared with the traditional burned-in magnesite; (3) Correct installation procedure is supervised by skilled Basic engineers employing specially designed equipment.

We look forward to the continuing opportunity to serve the industry with more Ramset bottoms, thus to help produce more efficiently the increased tonnage of steel demanded for defense and civilian needs.

Basic Refractories Incorporated

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Automatic Synchronization for Wire Drawing.

An engineering firm, like Aetna-Standard, prospers and contributes to the degree in which that company recognizes a need and gains the cooperation of the industry. Without that cooperation, little could be accomplished.

So we prefer to shine the spotlight on our customers instead of ourselves as we look back over 50 years and ahead to the next 50.

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"RUDOLPH SAYS HE KNOWS THE TAPS WOULD LAST LONGER IF HE HAD THE RIGHT CUTTING FLUID ON THE MACHINE!"

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A large instrument manufacturer changed to Stuart's THREDKUT for tapping Allegheny metal.

	Before Using ThredKut	After Using ThredKut
Tap Life	2 hours	8 hours
Production	180 holes per hour	400 holes per hour

You just cannot ignore the fact that the cutting fluid used is a major factor in any machining operation. A Stuart Representative is prepared to show you how Stuart combines theory and practice to give you better operating performance. Ask to have him call.

Are you receiving Stuart's Shop Notebook regularly? Write, wire or phone.

STUART SERVICE
Goes with every Barrel

CONSERVE TOOLS
Use the Right Cutting Fluid

D.A. Stuart Oil CO.
2735-37 S. Troy St., Chicago 23, Illinois

LETTERS
TO THE EDITORS

Comment on Readability

I feel some comment should be made on the first of a series of articles on blast furnace practice, (Dec. 10, p. 102).

The failure of the editor to use "the" and "a" and proper punctuation, changes what should have been an interesting article into one which is pure drudgery to read. Some people may believe that technical articles must be dry and too difficut to read and understand. I have never believed this to be the case, and I object when a magazine of your caliber does not maintain the high standard of writing I have been accustomed to find in it.

McCready S. Young
construction auditor
Lone Star Steel Co.
Lone Star, Tex.

• *We agree with you entirely. STEEL's editors just finished a two-day staff meeting on the very subject you mentioned—readability and timeliness. Here's hoping that we can perform better for you in 1952.*

Suggestion Box

May I suggest an addition to STEEL's Industrial Production Indexes which run in The Business Trend. Why not include an index on domestic sewing machine production?

W. H. Renner
"Renner" Limitada
Rio Grande do Sul, Brazil

• *Sewing machine production statistics are unavailable at the moment.*

Rereading on Shot Peening

In the Aug. 6, issue of STEEL, (p. 72), you published an interesting article by Charles Lipson on shot peening. As I wish to read it with great attention and to store it in my library without mutilating the magazine, I shall be grateful for a reprint of this article.

Dr. Alberto Oreffice
Turin, Italy

• *They're being sent.*

Permission Granted

We would like permission to reprint, either in whole or part, the article on brazed aluminum (Oct. 15, 1951, p. 80).

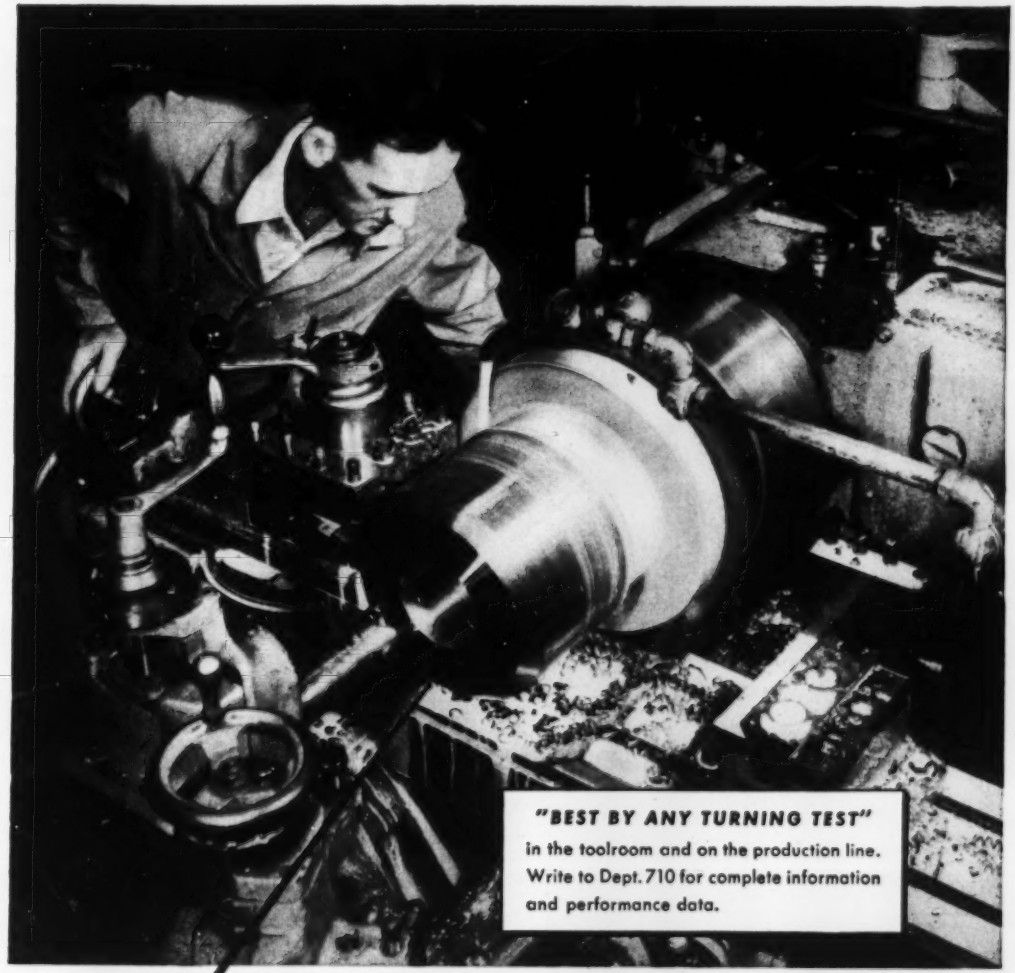
Lewis Melby, advertising department
Trane Co.
La Crosse, Wis.

• *Permission granted.*

We are interested in your description of a key driver used to drive keys in position on drop hammers (Dec. 17, p. 100). Where can we obtain additional information?

S. F. Harris
Harris-Thomas Drop Forge Co.
Dayton, O.

• *Write to Baker-Raulang Co., 1262 W. 80th St., Cleveland.*


"BEST BY ANY TURNING TEST"
in the toolroom and on the production line.
Write to Dept. 710 for complete information
and performance data.

Jones & Lamson turret lathes are BUILT and

POWERED TO PRODUCE

MORE CHIPS **per tool**

MORE PIECES **per hour**

MORE PROFIT **per job . . . than any turret lathe of comparable size!**

Turret Lathe Division **JONES & LAMSON**

MACHINE COMPANY

Springfield, Vermont, U.S.A.

MACHINE TOOL CRAFTSMEN SINCE 1835

The Van Norman No. 38 Miller gives you many cost-cutting advantages not found in any other miller of this type. The heavy, rugged column and sturdy ram are constructed to take all types of cuts including carbide milling. The massive cutterhead has a 10 HP motor driving the spindle, providing a 100% increase in power. Cutterhead speeds have been increased to 2000 RPM for high speed work.

It will pay you to investigate the advantages of this New No. 38. Check its features against other millers and you'll find it gives you greater opportunities to cut costs and increase production. Write for information.

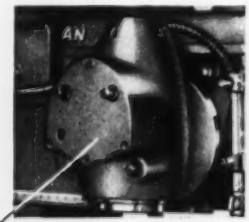
Production Work Hours . . .

VAN NORMAN

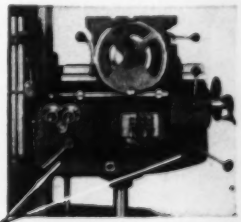
No. 38

RAM TYPE MILLING MACHINE

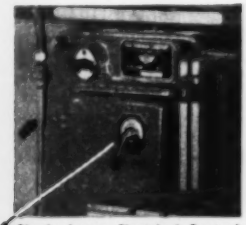
A Heavy-Duty Miller that provides many cost-cutting advantages



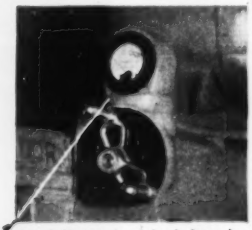
Adjustable Cutterhead permits horizontal, angular and vertical milling on *one* machine. Graduated in degrees for easy positioning.



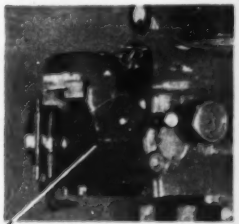
Front and Rear Controls of all power feeds can be operated from either position. Manual controls are also at front and rear.



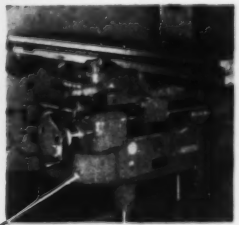
Single Lever Electrical Control controls spindle, feed, and coolant. The same lever reverses spindle direction.



Load Meter is right before the operator's eyes . . . gives visual indication of the "percent of load" that the machine is being operated under.



Massive Ram is heavier and stronger than on other machines. It is reinforced throughout for ruggedness and long life.



Heavy-Duty Knee Assembly, including table and saddle, is designed as an integral unit to provide maximum rigidity and accuracy.

VAN NORMAN COMPANY
SPRINGFIELD 7, MASSACHUSETTS

"Save with SIMONDS" Forged

Rotary Shear Knives

So says anyone who slits any type of sheet or strip metal. For they *know* that these "Red Streak" Knives cut straighter, cleaner, *and longer between sharpenings* . . . because they're forged and micro-finish ground. Forging condenses the grain structure — prevents nicking. Micro-finish grinding permits non-ferrous metal slitting without "pick-up."

Designed for specific shearing applications, these long-lived knives are made from 3 types of steel forged in Simonds' own mills . . . High Chrome, Special Alloy and High Speed. Send for free "Shear Selector" chart or ask for a "Simonds Man" to help with your slitting problems.

Cross section showing "Tungsweld" High Speed Steel inlaid cutting edge.

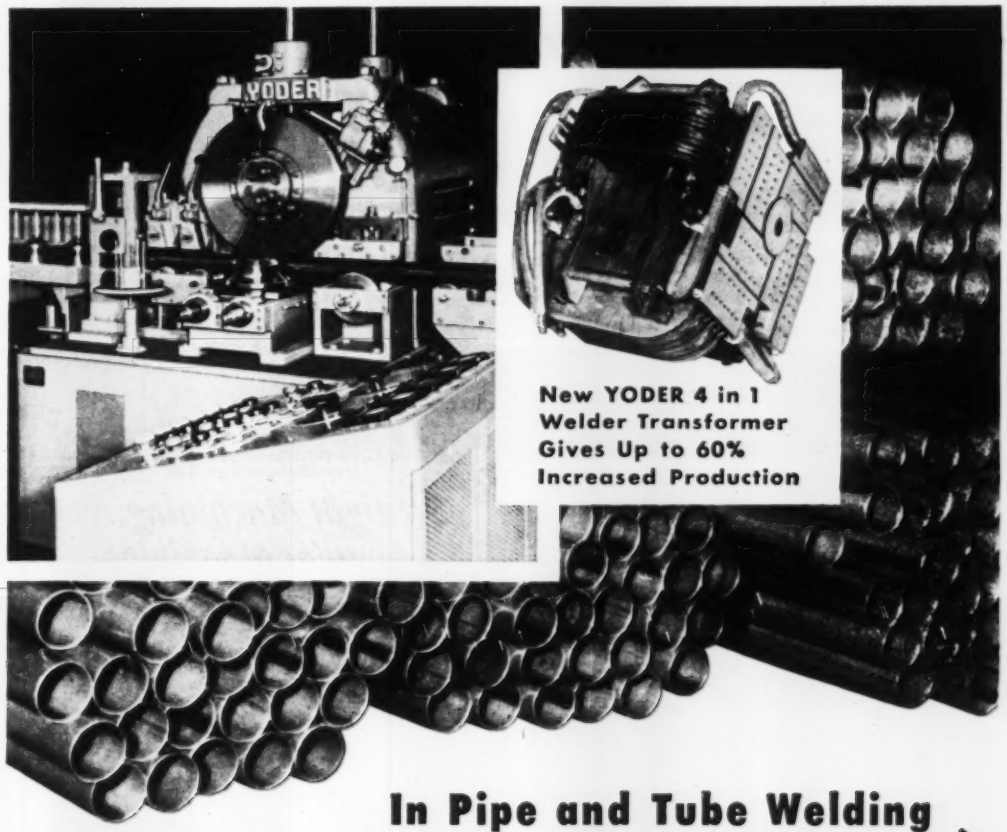
. . . and Squaring Shears

This "Tungsweld" Squaring Shear far outlasts other types . . . causes less down-time . . . gives far faster, cleaner shearing of tin plate, silicon, monel, stainless and other thin sheet metals . . . all because of Simonds' special method of welding a high-speed steel inlay to tough steel backing. Order a set today made to your exact specifications and "Save with Simonds."

SIMONDS SAW AND STEEL CO.
FITCHBURG, MASS.

FACTORY BRANCHES IN: *Boston, Chicago, San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.*

New YODER 4 in 1 Welder Transformer Gives Up to 60% Increased Production



In Pipe and Tube Welding

YODER SCORES AGAIN!

● Since the introduction of the Yoder electric resistance weld Tube Mills in 1939, nothing quite so important has happened as the new **Yoder four-in-one Welding Transformer.** Instead of the conventional single rotating transformer, it embodies four smaller transformers surrounding a common core, making a unit of unique compactness and strength which insures longer life and fewer interruptions for servicing. Equally important—impedance is reduced, resulting in higher electrical efficiency.

Compared with the present Yoder welder, production gains up to 20% are recorded. Compared with other tube welders, the gain may be as high as 50% to 60%. All Yoder tube mills henceforth will be equipped with this transformer. It is also available for replacement of welders in other tube mills.

Literature, recommendations and estimates for the asking.

THE YODER COMPANY • 5302 Walworth Avenue • Cleveland 2, Ohio

Complete Production Lines

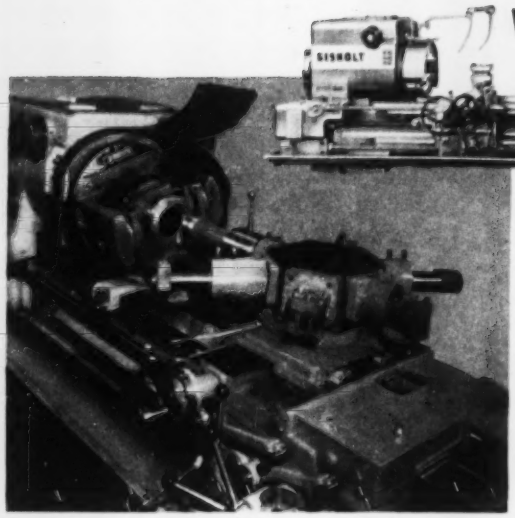
- ★ **COLD-ROLL-FORMING and auxiliary machinery**
- ★ **GANG SLITTING LINES for Coils and Sheets**
- ★ **PIPE and TUBE MILLS—cold forming and welding**

ENGINEERING YODER MANUFACTURING

Nice work if you can do it...

and you can...

with GISHOLT Turret Lathes...



Gisholt 3L Saddle Type Turret Lathe—one of five sizes for heavy-duty work of all kinds

Straight Machining... Angular Machining and Assembly...

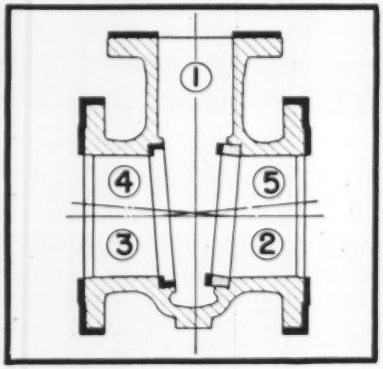
all in one chucking!

Talk about time-cutting ideas, here's the versatility of a Gisholt 3L Saddle Type Turret Lathe paying off again.

All operations required to machine these gate valve bodies are done in a single chucking with a five-position indexing fixture. In addition to machining the bonnet and the two ends, the recesses for the two seat rings are bored and threaded at a five degree angle.

Then the seat rings are inserted—and tightly screwed in place with a driver mounted on the turret. The driving is done with a constant torque—adjustable to suit each job. The final operation is finish facing the seat ring after it is in place with the cross-feeding turret.

Gisholt Engineers have storehouses of ideas to help you increase your production. Ask one to call.



GISHOLT MACHINE COMPANY

Madison 10, Wisconsin

THE GISHOLT ROUND TABLE *represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.*

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

PERFECT SURFACE IS A "MUST". . .

Large drying rolls, like the one below receiving its final polishing pass, are used in "Yankee Dryer" paper-making machines which turn out soft facial tissue. Even slight surface flaws in these eight- and twelve-foot diameter castings cause them to be rejected.

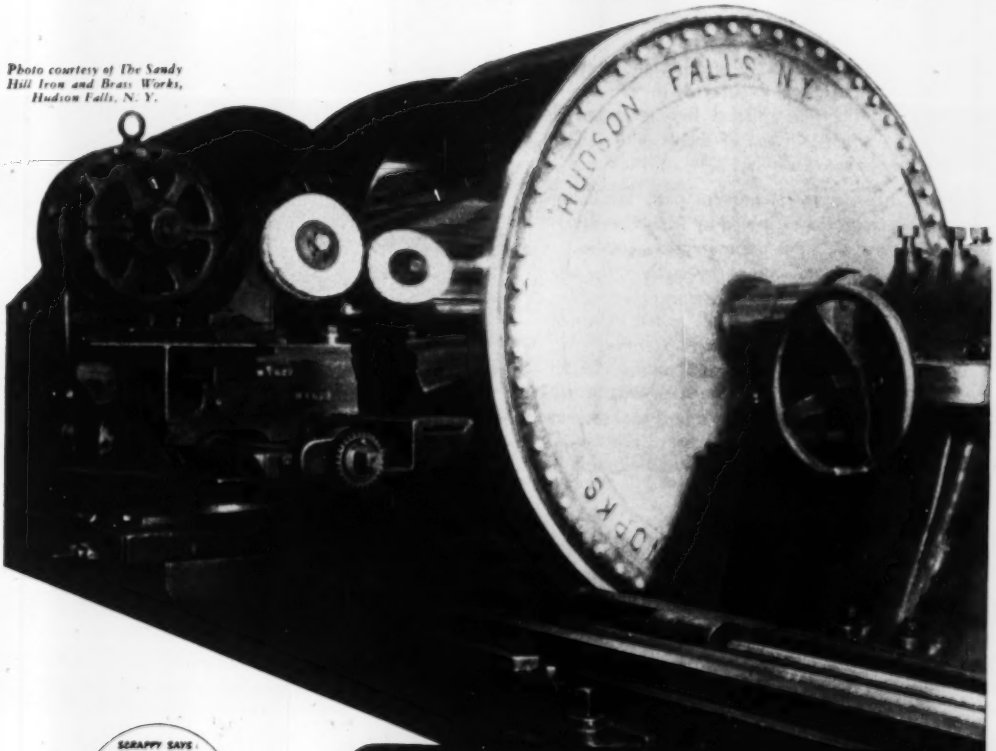
So they use CHATEAUGAY PIG IRON

. . . the low-phosphorus, copper-free pig iron that has eliminated scrap losses in countless "tough casting" jobs. With CHATEAUGAY, consistently uniform "physicals" assure predetermined fine grain structure throughout every casting, regardless of size or shape.

Whatever the requirements of your castings—if ordinary pig iron won't do the job—NOW is the time to investigate the *exclusive* advantages of premium CHATEAUGAY. A Republic Pig Iron Metallurgist will be glad to give you the complete facts at your convenience. Write today to:

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York

Photo courtesy of The Sandy Hill Iron and Brass Works, Hudson Falls, N. Y.



SCRAPPY SAYS:
AID DEFENSE
MORE SCRAP TODAY...
MORE STEEL TOMORROW

PIG IRON

REPUBLIC STEEL

Let this booklet show you the way to

INCREASED PRODUCTION EFFICIENCY THROUGH INDUCTION HEATING

Westinghouse has prepared a Case History Booklet showing a few of the Induction Heating applications presently being used by some of America's largest manufacturers. It's one amazing record after another of what Induction Heating can do . . . backed up by product, production and cost comparison figures. Some cases may remind you of situations in your plant. Others may suggest application possibilities not yet tried. But all the stories will give you a good idea of the ever-increasing scope of Induction Heating.

Already, thousands of different parts are being hardened, annealed or joined by Induction Heating. But there are thousands more that could be . . . and should be heat treated by this method. *Because in virtually every case where Induction Heating has been put to work, the user has gotten increased production efficiency . . . at lower operating cost!* But see for yourself what this outstanding tool can do. Just clip the coupon for your free copy of this informative booklet — or drop us a line with your request to Westinghouse Electric Corporation, Dept. S-38, 2519 Wilkens Avenue, Baltimore 3, Maryland.

CLIP THIS COUPON

Westinghouse Electric Corporation
Electronics & X-ray Division, Dept. S-38
2519 Wilkens Avenue
Baltimore 3, Maryland

Please send me a copy of the detailed Westinghouse Induction Heating Case History Booklet.

Name _____ Title _____

Company _____

Street _____

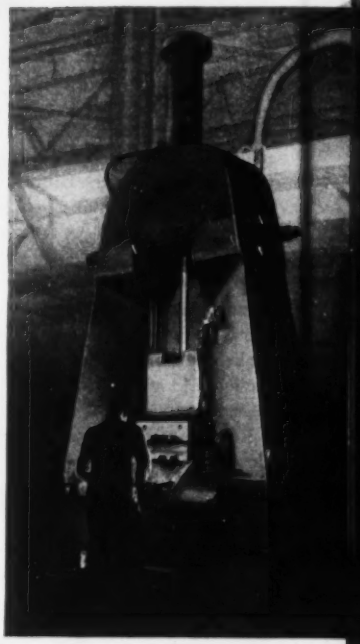
City _____ Zone _____ State _____

Painted by C. Schussele, 1864 for Jos. Harrison, Jr. *Courtesy Cochrane Corp., Phila., Pa.*

THE BLACKSMITH and KING SOLOMON

When the temple at Jerusalem was completed, King Solomon gave a feast to all employed in its construction. At the banquet, upon unveiling the throne, a blacksmith was found on the seat of honor, next to that of the King. When the crowd would have killed him for his impudence, Solomon stopped them saying, "Let him speak." Said the smith, "Thou had, O King, invited all craftsmen but me. Yet how could these builders have raised this temple without the tools I have fashioned?" "True," decreed Solomon, "the seat is his of right. All honor to the blacksmith."

THE IMPORTANCE OF FORGING



Through the ages, whenever metal parts had to stand up under greater-than-ordinary punishment, the metal was heated in a furnace and hammered into shape.

Hammering the hot metal did several things that no other form of manufacture did. It made it stronger and it made it tougher. The ancient smith had no microscope to tell him that the metal he was forming was crystalline in structure, and that the hammering broke the larger crystals into smaller ones with greater adhesion to each other, and that the hammering also compressed the crystals, made them into long needle-like shapes, forming the "grain" that contributed to the metal part's high tensile strength. The smith only knew that hammering made the metal tougher and stronger and that this toughness and strength came *only* from hammering.

Today, after centuries of metallurgy and metal working, hammering is still the only way to achieve maximum strength and toughness in metal.

Chambersburg, the hammer builders, have been engaged for over half a century in the design and manufacture of hammers to meet modern conditions—to make metal parts that are stronger and tougher than those made by any other process.

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS

GET RID OF UNWANTED HEAT FASTER, AT LESS COST WITH . . .

Republic Rubber ASBESTOS COVERED Cooling Hose

● Cold water, delivered through Republic Rubber Asbestos Covered Furnace Door Cooling Hose, works more efficiently to carry off unwanted heat!

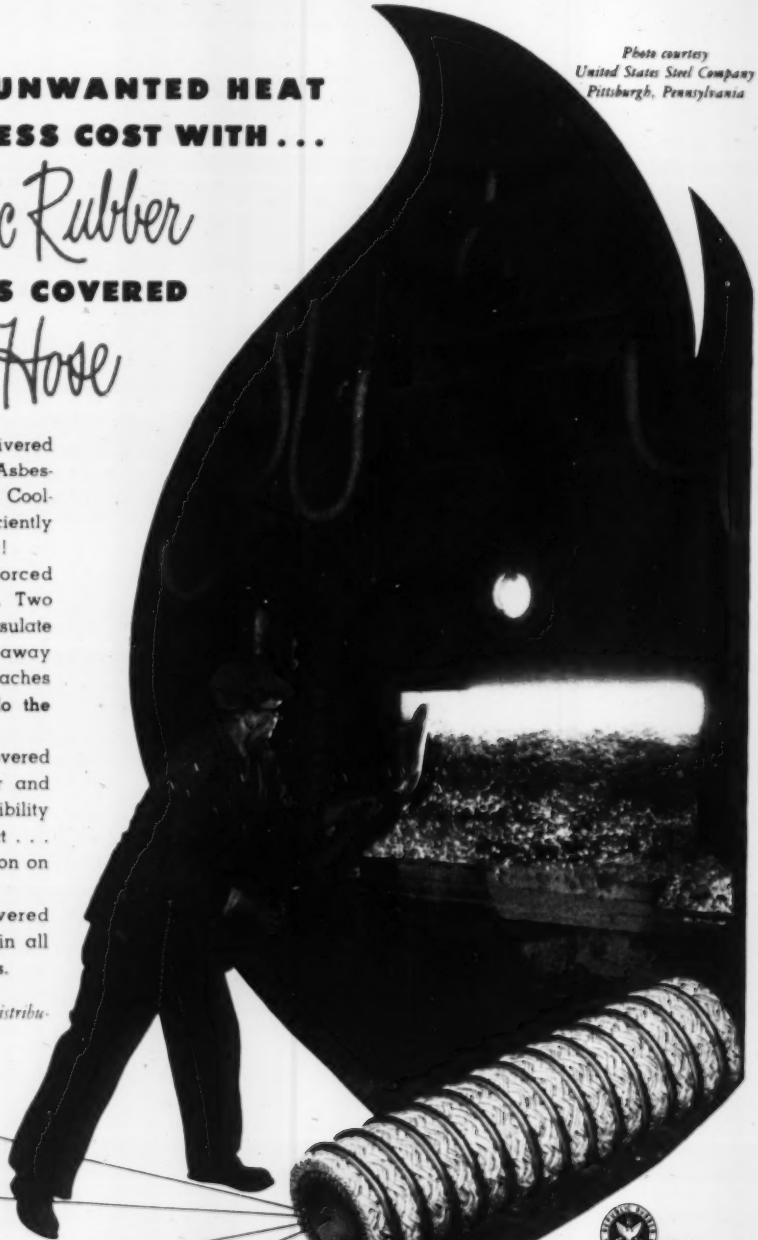
Exterior is wire-reinforced against mechanical abuse. Two plies of braided asbestos insulate the hose and keep the heat away from the coolant until it reaches the place where it **will do the most good.**

Republic's Asbestos Covered Cooling Hose lasts longer and costs less to use. Its flexibility makes it easy to connect . . . makes it ideal for installation on moving parts.

Republic Asbestos Covered Cooling Hose is supplied in all standard sizes and lengths.

Contact your local Republic Distributor or write direct for full facts.

Photo courtesy United States Steel Company Pittsburgh, Pennsylvania



EASY TO INSTALL

EASY TO REPLACE

LASTS 3 TIMES LONGER

MAINTAINS LOWER INTERNAL TEMPERATURES

INDUSTRIAL RUBBER PRODUCTS BY

REPUBLIC RUBBER DIVISION

Lee Rubber & Tire Corporation

YOUNGSTOWN, OHIO

More Help Now Available to You with the . . . GOULD Plus-Performance Plan

New FREE Check-Chart for Battery Maintenance Men

Just what you need for your battery room! Establishes rules to follow, eliminates hit-and-miss maintenance methods, guides new help, reduces training time, assures continuous battery care, prolongs battery life, cuts accidents. Size 17" x 22". Printed on heavy stock and varnished for durability and easy cleaning.

Here is the latest addition to GOULD PLUS-PERFORMANCE PLAN service. Used in conjunction with the Plan's vast library of articles, bulletins, specifications, manuals, record cards, charts and graphs, this battery maintenance check-chart makes it even more possible to improve battery performance as much as 50%, increase output, save man-hours and cut costs. Like all GPPP material, it's FREE to users of the Plan.

Gould "Thirty" with "Z" Plates—
America's Finest
Industrial Truck Battery

Mail this Coupon Today

BATTERY MATERIALS ARE SCARCE—AND GETTING SCARCER EVERY MONTH! IF YOU NEED BATTERIES, LET US QUOTE ON YOUR REQUIREMENTS NOW.

GOULD
STORAGE BATTERIES

GOULD-NATIONAL BATTERIES, Inc.
Trenton 7, New Jersey

Always Use Gould-National Automobile and Truck Batteries

GOULD-NATIONAL BATTERIES, INC., Trenton 7, N. J.

Please send full information on the GOULD PLUS-PERFORMANCE PLAN including FREE check-chart for Motive Power Battery maintenance.

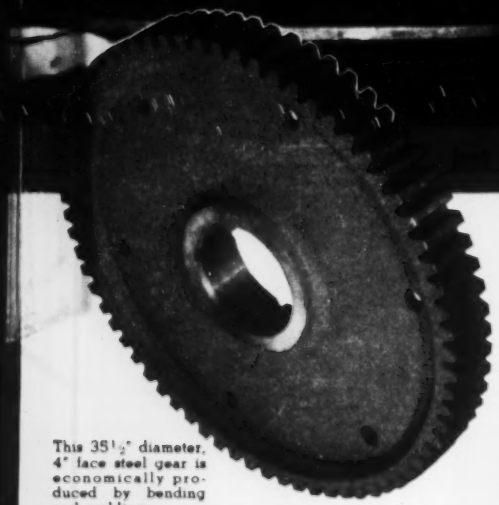
NAME_____

FIRM_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Wedge action die for bending rings in horizontal position. Removable inserts adapt this die for various diameters.



This 35½" diameter, 4" face steel gear is economically produced by bending and welding.

This steel gear rim is completely formed from flat bar to ring in less than two minutes by repeated hits on a Cincinnati Press Brake.

The wedge action dies require but little tonnage to bend this 2" x 4" hot rolled 35-45 carbon steel bar.

The great versatility of the Cincinnati Press Brake eliminates the need for an additional and highly specialized machine on this small-run job.

Low cost and quick changeover from job to job are among the factors that will make Cincinnati Press Brakes profitable in your shop.

Write for Press Brake Catalog B-3.

Contact our Engineering Department, who will suggest and advise on your production problems.

THE CINCINNATI® SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

The Metalworking Outlook

January 21, 1952

Nickel in a Pickle

A government ban may soon be placed on all nickel plating. Hardest hit by such action would be the auto makers who have been permitted to nickel plate such functional parts as bumpers. Because nickel anode inventories are almost exhausted and because of the apparent imminence of the ban, auto men are stepping up their search for satisfactory substitutes.

Steel: Easier To Get

Nickel is becoming harder to get, but steel supplies are easing. Warehouses are among the first to feel the slackening, particularly on straight chrome stainless. So easy is that product to find that the NPA Iron & Steel Division will decontrol it Apr. 1 in the first of what it hopes can be a series of such actions on various products. The inventory and production controls on straight chrome stainless remain in force. The slackening in demand won't affect mill schedules for some time yet; if the trend continues, even production rates will slip, along about midyear.

Troubles in Aluminum

Troubles are mounting in aluminum allocations. NPA has been overoptimistic in its estimate of supply and has allowed too high an attrition factor in calculating allocations. At the end of the last quarter, CMP tickets could not be cashed for 90 million pounds. The backlog of uncashed tickets may reach 153 million pounds by the end of March, unless aluminum is withdrawn from the stockpile.

Cutbacks in Aircraft

Watch for a shakeup in aircraft ordering by the U.S. (p. 38). The Air Force will get only about $20 billion in the coming fiscal year, $10 billion less than it asked for, so cutbacks will be coming. Even so, the aircraft industry is doing well. As of Sept. 30, 1951—the latest date for which figures are available—it had an order backlog of complete aircraft, aircraft engines and propellers of $10,468 million, 13 per cent above the June 30, 1951, backlog and 119 per cent above orders on hand Sept. 30, 1950. Of the total backlog last September, $8794 million was U.S. military orders.

Machining Titanium

Titanium can be machined. Military men are convinced after seeing it done with the help of a "Hi-Jet" coolant-lubricant system. Developed by Gulf Research & Development Co. and Thompson Products Inc., the system force-feeds the coolant-lubricant to metalworking tools.

More for Small Business

Expect a steadily increasing share of defense business to go to small business. Pressure by individual congressmen, small business committees in both houses and the Small Defense Plants Administration is

Production-Engineering News—p. 61 *The Market Outlook—p. 101*

beginning to be felt. Small business received 16 per cent of the total dollar value of military contract awards last July, 18.7 per cent in August, 22.1 per cent in September and 22.8 per cent in October, the latest month for which figures are available.

Just a Flicker

Hopes for a New England steel mill still flicker—but just barely. Most steel consumers in the area now think Bethlehem Steel Co.'s expanding Sparrows Point plant, U.S. Steel Co.'s new Fairless Works and the proposed National Steel Corp. plant near Philadelphia will give them enough help. The Fairless plant is now about 35 per cent completed and is close enough to New England to provide some attractive freight rates.

Oil Demand Rises

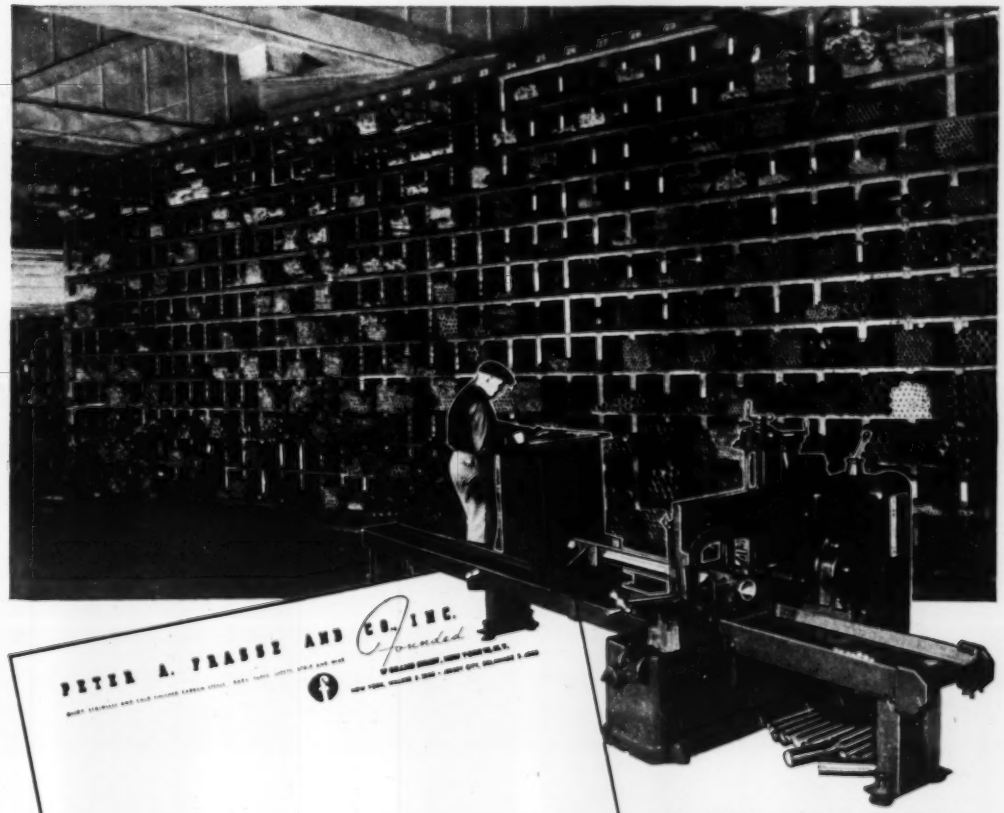
Prepare for tighter oil supplies. No severe shortages are expected, but spot scarcities will develop, especially in the East. The reason: Refinery runs have declined a little and demand has risen more than expected. Petroleum demand in the U.S. will amount to 7,821,000 barrels per day in 1952, a 4.6 per cent increase over 1951, estimates Petroleum Administration for Defense. Last November the increased 1952 requirements were put at only 4.4 per cent above 1951 levels. The actual stock level for the four major products at the end of 1951 was about 274 million barrels, 12 million barrels lower than had been estimated.

Straws in the Wind

Deficit of from 40,000 to 70,000 engineers is likely in 1952 . . . Further restrictions on exports of iron and steel scrap, pig iron and machine tools go into effect Feb. 1 . . . Allocation of materials for 600,000 new housing starts in '52 isn't a limitation of starts, says DPA . . . The Army unveiled its new 24-million-volt betatron at Granite City, Ill., last week . . . A German-developed coaxial cable that can be used in high frequency microwave applications such as television and communications is being marketed by Phelps Dodge Copper Products Corp. . . . Hard goods expenditures amounted to $13 billion of the $15.2 billion obligated by the Defense Department in the first five months of fiscal '52.

What Industry Is Doing

Copper balance may improve this year, but we'll still be in the red (p. 33) . . . Steel tonnage produced in '51 smashed all existing records (p. 34) . . . Where allotments of second-quarter materials will go (p. 35) . . . Scrap is the big "if" in greater steel production (p. 35) . . . Fuse makers are caught between two currents (p. 36) . . . Steel and coal labor fireworks may explode simultaneously in March (p. 37) . . . DPA is changing its tune on fast amortization priority (p. 44) . . . Danger of water pollution in the nation's streams is growing (p.45).



PETER A. FRASSE AND CO., INC.

Armstrong-Blum Mfg. Co.
5700 Bloomingdale Avenue
Chicago 39, Illinois

Gentlemen:

We are very satisfied with the performance of the new 6A and 9A Marvel Heavy-Duty Automatic Hack Saw Machines recently installed in our warehouses. Our decision to purchase these new Marvel saws was based on the satisfactory performance we have been receiving for the past 10 years from our original Marvel machines.

In our business of warehouse distribution of carbon, alloy and stainless steel bars and tubes, we are called upon to make accurate cut lengths for customers, and on numerous occasions handle orders for hundreds and sometimes thousands of multiple cut pieces. Our Marvel saws help us to rapidly and efficiently handle such sawing requirements.

Marvel saws and high-speed edge hack saw blades are giving satisfactory performance in all our warehouses, and your service has been most cooperative.

Very truly yours,

PETER A. FRASSE AND CO., INC.

W. R. Davis
Assistant Vice President

WRD/sac

MARVEL Saws Speed-up Deliveries

You will get cut-off lengths in any quantity faster from the steel warehouses and stockrooms that are equipped with MARVEL 6A and 9A Automatic Hack Saws. Far faster, floor to floor, than any other hack saws, they save valuable machine hours by reducing cutting-off time to a fraction,—save other machining hours by producing accurately cut pieces of exact length.

ARMSTRONG-BLUM MFG. COMPANY

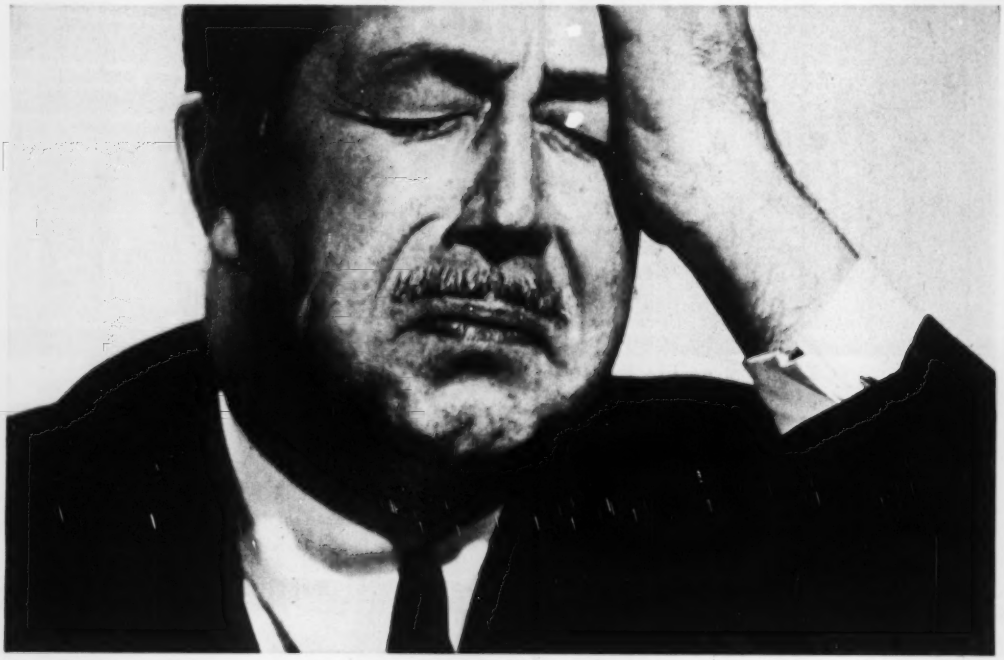
"The Hack Saw People"

5700 BLOOMINGDALE AVENUE CHICAGO 39, U. S. A.

MARVEL *Metal Cutting* **SAWS**

Better Machines—Better Blades

Sure Way to Lick a Steelmaker's Headache



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You Can Help Provide Relief—

Turn In Dormant Scrap

to keep the mills producing at full capacity

In cooperation with the Steel Industry Scrap Mobilization Committee

DETROIT STEEL CORPORATION

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Slabs • Sheet Bars • Billets • Wire Rods
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To Heart and Head

Trained observers in Washington say that experience accumulated during the administrations of Presidents Roosevelt and Truman has brought about revolutionary changes in political philosophy. They say that the use of vast public spending as a political tool has become so firmly entrenched it will be difficult for a new administration of either party to depart sharply from it.

It is also reported that top-flight politicians are not worried about the size of the public debt. They think it can be handled, even if it increases, as long as we have an expanding economy. Also, they believe it would be impossible to reduce the debt drastically because the American public would not stand for the lowered standard of living it would entail.

The Washington political view on inflation is interesting. Bigwig politicians are not worried about inflation as long as it does not develop to the runaway stage. They figure that the only people hurt by inflation are those on pensions and annuities. These persons constitute a small, unorganized minority with limited voting strength. Therefore, reason the politicians, why bother?

As to corruption, politicians high in the administration have a cynical belief that the mink coat, tax scandal and other instances of dishonesty of government employees will not influence any undue portion of the people at the polls next November. These politicians feel that lots of people, particularly workers and farmers, think they have fared quite well under the present administration and will vote to retain it.

In short, many professional politicians think that most of the voters are not deeply concerned about the long-term dangers of reckless spending and unsound fiscal policies but are influenced mainly by self-interest in apparent current advantages.

If the average voter is as selfish and as short-sighted as these politicians think he is, our country is doomed to a continuance of mediocre federal government. Fortunately, the average American citizen is more intelligent than Washington thinks, and the presidential candidate who appeals to his heart and head will win out over the one who appeals solely to his pocketbook.

E. C. Shaner
EDITOR-IN-CHIEF

MORE RESEARCH IN '52: After studying variations in the character of industrial research before, during and after World Wars I and II, the president of an Ohio enginering company concluded that research activity follows a rather definite timetable as a result of the disruptions of war. At the beginning of war there is a period of transition from civilian production to war work. Then for about 18 months commercial research is pushed aside in favor of

pressing military matters. After this 18-month period, manufacturers begin to think of post-war markets and research begins to pick up. It continues at high levels for three years after the war ends and then tapers off to normal.

He believes that now that the Korean war is almost 18 months old, research for new products and processes will hit a new peak in 1952. Supporting this belief is the fact that applications for patents increased during the last two months, after dropping to a new low. —p. 43

* * *

ALLOTS LESS STEEL: Defense Production Administration's allotments of steel, copper and aluminum for the second quarter will cause most manufacturers of consumer durable goods to cut production in April, May and June about 10 per cent below that of January, February and March. Scarcity of copper is said to be the greatest limiting factor in allotments for production and construction in the next quarter.

NPA estimates steel supply in second quarter will be just under 22 million tons. Over half of this available supply is allocated to six large claimant agencies. In order of tonnage allotted they are: Motor Vehicles Division of NPA, Department of Defense, Petroleum Administration for Defense, and Railroad Equipment, Container and Packaging, and General Components divisions of NPA. Steel allotted to these six agencies totals 11,666,258 tons. The largest single allotment is 3,009,760 tons for the automobile industry, which supposedly will permit a second-quarter ceiling of 930,000 units. —p. 35

* * *

NEW GOAL FOR SCRAP: Chief emphasis at the annual convention of the Institute of Scrap Iron & Steel Inc. in New York last week was focused on delivering ferrous scrap to meet requirements of the expanding iron and steel industry in 1952. It is estimated that the need for purchased scrap will range between 36 and 38 million tons. The president of the Institute proposed that its motto be "38 million tons or bust in '52!"

We have confidence in the ability of scrap dealers to deliver this tonnage provided they receive reasonable co-operation from those who control the sources of scrap. In 1951 demand turned out to be 34 million tons, and by extraordinary effort supply was boosted to this level. The going may be even rougher this year than last, but if everybody who has anything to do with scrap will do his part the goal will be achieved. —p. 35

* * *

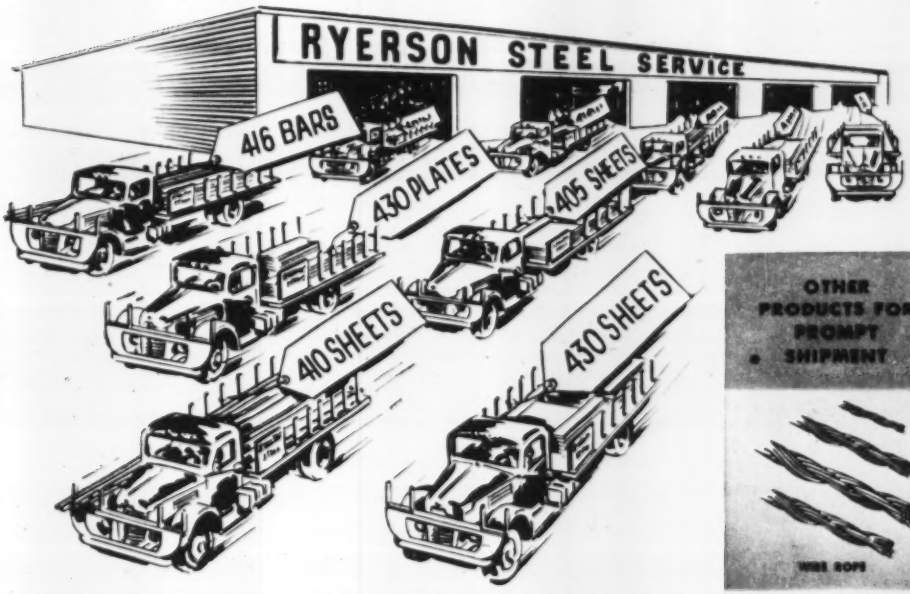
MUST CURB POLLUTION: Growth of population and expansion of industry are creating new complications for an already serious national problem of stream pollution. Industry is heavily involved because at least half of the pollution load consists of industrial waste. Also it is estimated that only about a fourth of the industrial companies discharging wastes into waterways are equipped with waste treatment facilities.

This situation, coupled with that of pollution of the air by fumes from industrial establishments, will command much more attention in the future than it has in the past. Many metal-working companies are co-operating with district, state and local commissions in attempts to correct present evils, but this work must be intensified and expanded drastically. It has been suggested that a modification of tax laws which would permit accelerated depreciation of waste treatment facilities would help appreciably. A bill authorizing speedier write offs now is before the House Ways and Means Committee. —p. 45

* * *

SAVE CRITICAL METAL: Current news items and engineering articles indicate that efforts to conserve critical materials are being pushed vigorously on a wide front. For instance, the melting departments of an alloy steel producer are relying upon more accurate computations to melt within a narrow chemical specification range in order to conserve critical alloying elements. Electrochemists are using new methods for determining tin plate coating weights to conserve tin. General use of strip steel clad with gilding metal for bullet jackets is saving many tons of copper and zinc. An automobile builder is saving steel, aluminum, copper and stainless steel by redesigning automobile accessories without reducing their efficiency.

If the amount of critical materials saved by these and similar efforts could be computed in tons, the totals would be amazing and gratifying. —pp. 47, 66, 68, 72



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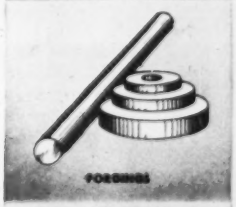
Straight Chrome in Every Gauge & Size

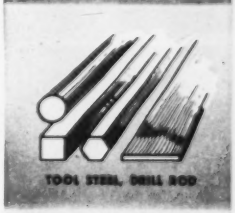
As stainless users switch to straight chrome types, Ryerson is ready for them. Ready with the nation's largest and most diversified stocks of straight chrome stainless steels.

Our stocks are large because we began building them months ago—when it first became evident that the use of nickel would be restricted. As a result, you can maintain your stainless production now, despite restrictions, by calling Ryerson.

All the straight chrome steels shown on the tags above are on hand in a wide range of gauges and sizes. So we are in a good position to handle almost any requirement. And all are time-tested Allegheny stainless steels of definitely established performance.

If you are looking for a metal to replace nickel-bearing steels, we urge you to consult our stainless specialists. Then draw on our large stocks of straight chrome types. A special technical bulletin on chrome stainless alternates for various applications of 18-8 stainless has just been published. Write for your copy.





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JOSEPH T. RYERSON & SON, INC. STEEL-SERVICE PLANTS AT: NEW YORK • BOSTON
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"That's it! I'll bet that's the answer to my coating problem"
"Ted Hubbard, what *are* you talking about?" asked his wife.
"That wax paper you're tearing . . . that may be the answer to the thing that's been giving the can manufacturers all the trouble."
Ted, an Inland mill representative, had been working for some time on a very peculiar problem in the plant of a large can maker and Inland tin plate customer. In lacquering tin plate for can ends, this customer's sheets had been coming through with "eye holes" (pin-head-size spots where lacquer failed to coat). Neither Ted, nor anyone else, had been able to learn *why*.
Ted, idly watching his wife tear wax paper from a roll, remembered: *Wrapping tin plate packages in wax paper was standard practice for many steel producers, and paraffin, a mineral oil derivative, would not mix with lacquer.*
Ted had a hunch.
Next day, the problem was solved! Ted proved that when the tin plate was removed from the wax paper wrapper, microscopic wax particles adhered to the edges of the sheets. During the lacquering process, these particles were drawn up from the edges and across the sheets by suction from the lifting device . . . were picked up by the roller coaters . . . and wherever a particle lodged, lacquer failed to coat that spot on the sheet. This was the cause of the eye holes.
Tin plate producers switched to a different type of paper wrapping with the result: no more eye holes! INLAND STEEL COMPANY, 38 South Dearborn Street, Chicago 3, Illinois.
Names used are fictitious
Making Steel
Do Your Job Well
Is Inland's Job
Wax Paper
Your Scrap is Needed by The Steel Industry for National Defense

Copper: Some Basis for Optimism

The shortage of the metal is admittedly bad, but capacity expansions, price modifications and increased scrap collections may improve the situation eventually

The rapidly increasing military share of available copper is one of the reasons for the shortage. While the situation is serious, there's some ground for optimism even though we must resign ourselves to reliance on imports of ores and the refined metal for part of our supplies from now on

WE'LL STAY in the red on copper for the rest of 1952, at least, but expect a little closer balance between supply and demand later this year.

Copper—or rather the lack of it—will be the controlling factor in 1952's industrial production when the final accounts are tabulated. Auto builders have the steel and aluminum to assemble 930,000 cars next quarter, but the red metal's shortage may cut their production to 800,000. Whenever copper is used in civilian products, its availability is the major ceiling on output. Even in defense-related projects such as power expansion copper is often a stopper.

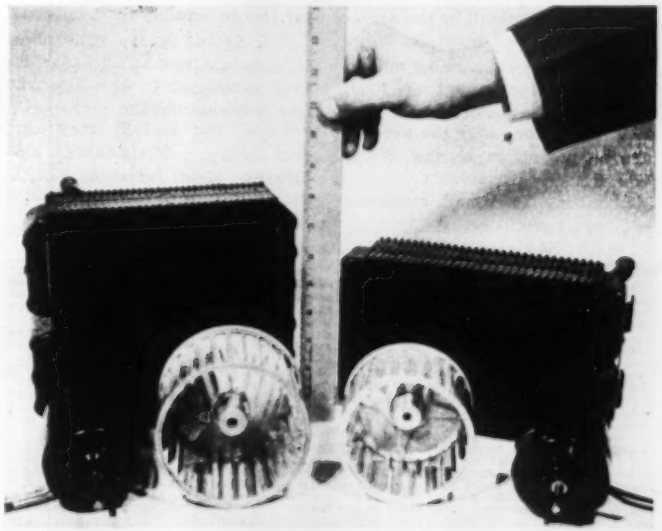
Facts of the Matter — Refined copper supply in 1952 will be about 1,626,000 net tons, compared with 1,609,000 in 1951 and 1,747,000 in 1950. The gain in 1952 will come primarily from increased production of refined copper from domestic ores. It was 933,000 tons last year, may be slightly above 1 million tons this year. In 1951, the industry got 933,000 tons of refined copper from domestic ores, 133,000 tons from scrap, 259,000 tons from foreign ores, 229,000 tons from direct imports of the refined metal and 55,000 tons from stockpile withdrawals.

Of the total refined copper supplies now available, some 30 per cent is going into the defense program. E. O. Sowerwine, vice president, Anaconda Copper Mining Co., foresees the possibility that as much as 60 per cent will go for defense sometime this year (see cover). The defense take will increase so markedly primarily because of greater emphasis on ammunition production where large quantities of copper are needed for cartridge cases and the steadily rising output of electronic equipment, for which copper is essential.

Whys of the Shortage—That defense share in copper supplies is the major reason for a shortage, but other factors have compounded the difficulties. One was the domestic and foreign strikes last year. As much as 50,000 tons of refined copper was lost by walkouts and slowdowns in the U. S. that occurred intermittently from last July into September. A Chilean strike caused about as serious a loss.

Price controls, say many consumers and producers, also contribute to the shortage. In effect is a domestic price of 24.50 cents a pound, on the primary metal, a Chilean quotation of 27.50 cents and a world market price of 50 cents and higher. Domestic mills can't afford the world price because of price controls, so copper imports have been lagging.

Hopes for Improvement — Officials in the copper industry, including C. F. Kelley, Anaconda chairman, say that many causes of the copper shortage can be cured and that repeated government statements about a "permanent" copper shortage are "unwarranted and amount to propaganda." In a survey among copper consumers as to whether they think the government is being unduly pessimistic about the copper situation, STEEL found that a slight majority believes that the outlook is not as dark as painted in Washington. Most believe we are at last in a good position to lick the copper



TAKES LESS—GIVES MORE: Heater motor, core and blower wheel at right save considerable critical copper and steel compared with 1951 model at left. The new units, part of Ford Motor Co.'s 1952 cars and trucks, are considered 15 per cent more efficient. They can produce even inside temperatures of more than 80 degrees in zero weather and defrost a 67 per cent larger area in a given time than was possible with previous models, Ford says

shortage because many CMP bugs have been shaken out and most copper tickets can now find a home.

Even the most pessimistic consumers agree that the copper supplies would be improved if the confusing price situation were cleared. That could be accomplished, say copper producers, by raising the domestic price 3 cents. That would mean an ultimate increase in refined production of 100,000 to 150,000 tons yearly, they believe.

Pitfalls of Substitution—Substitution is undoubtedly an out for many civilian goods makers but there are limits and dangers in that approach. The average automobile today contains about 42 pounds of copper, some 20 or 25 pounds of which are in the radiator. Ford Motor Co., by using thinner copper gages and some substitutes for copper, has reduced the copper content in its products about 20 per cent. The average reduction throughout the auto industry is six pounds per car.

Prospect for Expansion—Expansion programs in copper are ambitious and the capacity in the U. S. and friendly foreign nations should be about 205,000 tons a year above present levels just two years from now. The total monthly copper supply available to America by 1956 U. S. production plus imports could reach 150,000 tons a month, according to Anaconda's Mr. Kelley.

Marginal output will also rise. Under a new program, the U. S. will pay premiums to help marginal mine operators. One of first deals is with Calumet & Hecla Consolidated Copper Co.

The U. S. may also get a better shake on imports through new allocations of copper sponsored by International Materials Conference. The first allocations were made for the fourth quarter of 1951. Says Roger W. Straus, chairman, American Smelting & Refining Co., "Insufficient time elapsed to judge the program's success."

Outlook for Scrap — Increased scrap collections this year can also improve copper supplies. A nonferrous salvaging committee began a new collection campaign at the turn of the year. A few brass mills say they can already detect a slight gain in receipts of the material.

Nobody denies the seriousness of today's copper shortage, but a look at the books reveals a basis for optimism. A little more of the red metal will be available late this year. A balance of supply and demand is possible eventually.

Critical Copper

Because it's so tight consumer durables will take a 10 per cent cut in the second quarter

"THE UNAVAILABILITY of copper is the greatest limiting factor for all second quarter production and construction."

So says the Defense Production Administration. Because of the situation in copper, production of consumer durable goods in April, May and June will be about 10 per cent below the level of January, February and March.

Cut Back—Carbon steel is allotted to sustain consumer durables production at about 45 per cent of output in the first half of 1950 (the base period); brass mill products at 22 to 29 per cent and aluminum at about 30 per cent.

All construction will also be curtailed. In the next quarter enough steel will be allocated for private housing starts at an annual rate of only 600,000, compared with about 1 million in 1951. Starts on commercial construction will virtually stop next quarter. Even industrial expansion will be hit, for only 213,000 tons of structurals have been allocated and 275,000 tons were needed just for projects already underway. Construction of all types authorized for the second quarter is at the rate of about $6.5 billion, compared with $7.6 billion in the second quarter of 1951 (dollars adjusted for inflation) and $6.7 billion in second quarter, 1950.

The Reason Why—The cutbacks in construction and consumer durables (including autos which will have a second-quarter ceiling of 930,000 units) were to make room for more military production. Al-

Steel Production Sets New Records

THE record-breaking production of steel for ingots and castings in 1951 totaled 105,133,424 net tons.

This is shown in a preliminary report just completed by the American Iron & Steel Institute.

The 1951 record was 8.3 million tons above the output of 1950, previously the record year, and 17.8 million tons over the average annual production during World War II.

In setting the record, steelmaking furnaces operated at an average of 100.9 per cent of capacity during 1951. Never before had the average equalled or exceeded 100 per cent of capacity for a full year.

New figures on the steel industry's annual production capacities were announced by the American Iron & Steel Institute.

As of Jan. 1, 1952, they were (net tons): Steelmaking, 108,587,670; blast furnaces, 73,782,340; and coke, 67,060,240.

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated Weekly	Number of weeks in
1951	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	production (Net tons)	months
January	7,844,982	101.4	431,725	90.4	566,460	88.3	8,843,167	99.9	1,996,200	4.43
February	6,935,512	99.3	326,112	75.6	504,077	87.0	7,765,701	97.1	1,941,425	4.00
March	8,039,623	104.2	408,926	85.6	602,504	93.9	9,071,055	102.4	2,047,642	4.43
1st Quar.	22,840,119	101.7	1,166,763	84.2	1,673,041	89.8	25,679,923	99.9	1,996,884	12.86
April	7,857,161	104.9	392,472	84.9	590,888	95.1	8,840,521	103.1	2,060,728	4.29
May	8,071,270	104.3	408,650	85.6	614,579	95.7	9,094,499	102.7	2,052,934	4.43
June	7,667,811	102.3	403,001	87.1	586,148	94.3	8,656,960	100.9	2,017,939	4.29
2nd Quar.	23,596,242	103.9	1,204,123	85.9	1,791,615	95.0	26,591,980	102.2	2,043,965	13.01
1st 6 mo.	46,436,361	102.8	2,370,886	85.0	3,464,656	92.4	52,271,903	101.1	2,020,561	25.87
July	7,704,433	99.8	411,599	86.4	563,215	87.9	8,679,247	98.2	1,963,631	4.42
August	8,093,322	99.4	436,822	91.5	603,448	94.0	8,733,592	98.6	1,971,465	4.43
September	7,652,167	102.4	404,726	87.7	598,004	96.4	8,654,897	101.2	2,022,172	4.28
3rd Quar.	23,049,922	100.5	1,253,147	88.5	1,764,667	92.8	26,067,736	99.3	1,985,357	13.13
1st 9 mo.	69,486,283	102.0	3,624,033	86.2	5,229,323	92.5	78,339,639	100.5	2,008,709	39.00
October	8,027,006	103.8	458,128	95.9	631,000	98.3	9,116,134	102.9	2,057,818	4.43
November	7,749,190	103.4	411,954	89.1	632,507	101.8	8,793,651	102.5	2,049,802	4.29
†December	7,885,000	102.2	397,000	83.3	602,000	94.0	8,884,000	100.5	2,010,000	4.42
4th Quar.	23,661,196	103.1	1,267,082	89.4	1,865,507	98.0	26,793,785	102.0	2,039,101	13.14
2nd 6 mo.	46,711,118	101.8	2,520,229	89.0	3,630,174	95.4	52,861,521	100.7	2,012,239	26.27
Total 1951	93,147,479	102.3	4,891,115	87.0	7,094,830	93.9	105,133,424	100.9	2,016,368	52.14
December	7,434,863	99.8	380,011	79.8	540,437	90.0	8,355,311	98.0	1,890,342	4.42
4th Quar.	22,281,406	100.6	1,187,505	83.8	1,662,479	93.1	25,131,390	99.2	1,912,587	13.14
2nd 6 mo.	44,086,979	99.6	2,382,156	84.1	3,192,348	89.4	49,661,483	98.0	1,890,426	26.27
Total	86,767,509	98.7	4,534,558	81.3	6,039,008	86.5	96,836,075	96.9	1,857,232	52.14

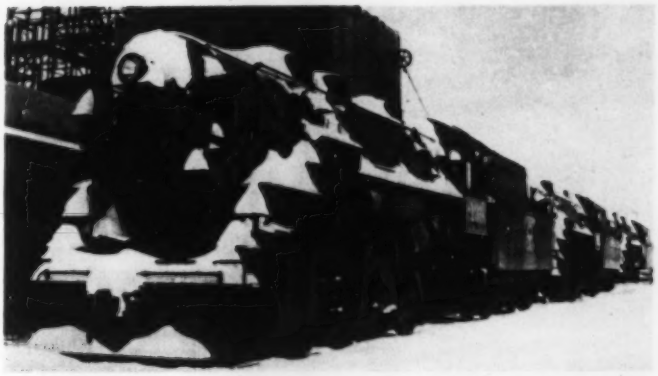
Note—The percentages of capacity operated in 1951 are calculated on weekly capacities of 1,746,337 net tons open-hearth, 107,806 net tons bessemer and 144,891 net tons electric ingots and steel for castings, total 1,999,034 net tons; based on annual capacities as of Jan. 1, 1951, as follows: Open-hearth 91,054,020 net tons; bessemer 5,621,000 net tons; electric 7,554,630 net tons; total 104,229,650 net tons.
† Preliminary figures, subject to revision.

lotments of structural steel to the military increased from 171,000 tons in the first quarter to 240,000 tons in the second. Military allotments of brass mill products increased from 230 million pounds in he first quarter to 240 million in the second. Military requirements for aluminum in the second quarter were also increased from the first.

The cutbacks in materials for consumer durables and construction is also made more severe because of a revised over-allotment policy. Up until now, DPA has allocated considerably more aluminum, steel and copper than was available on the theory that some of it would never be called for. The over-allotments proved too high.

For the second quarter, the over-allotment is: Carbon steel, 110 per cent; structural steel, 106 per cent; steel plate, 105 per cent; alloy steel, 112 per cent; stainless steel, 115 per cent; copper brass mill products, 105 per cent; copper wire mill products, 105 per cent; copper foundry products, 110 per cent; and aluminum, 105 per cent.

The accompanying table shows what agencies get the materials.



QUITE A HAUL: Biggest single haul of industrial scrap made by the scrap committee of the Chicago Association of Commerce & Industry amounted to more than 1000 tons. Pledged to the committee by Belt Railway Co., Chicago, are seven steam locomotives with tenders, a 150-ton coal chute and storage structure and a continuing flow of miscellaneous scrap

Scrap: Big 'If' in Greater Steel Production

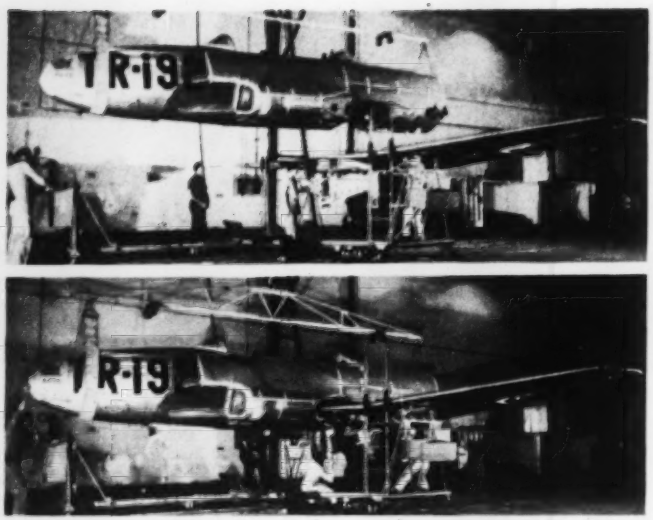
A HERCULEAN collection task faces the 3000 scrap iron and steel dealers in the U. S. this year. Their problem is to find the 36 to 38 million tons of purchased scrap needed to operate the nation's steel mills and foundries at full capacity. Aproximately 34 million tons were consumed by the steel industry in 1951—metallic equivalent of 65 million tons of iron ore and 30 million tons of coal.

Where's the additional scrap coming from? That question was

Where Allotments of Second Quarter Materials Will Go

GENERAL CLAIMANTS	STEEL (TONS)	COPPER & COPPER ALLOYS (000 lbs)	ALUMINUM (000 lbs)
Estimated Supply	21,810,500	1,391,000	705,000
Dept. of Agriculture	52,105	1,376	87
Dept. of Army	32,560	1,392	194
Atomic Energy Comm.	118,790	7,673	5,553
Civil Aeronautics Admin.	20,098	1,222	194
Defense, Dept. of	2,617,361	309,940	278,190
Defense Electric Power Admin.	339,650	62,009	58,212
Defense Fisheries Admin.	712	26	...
Defense Minerals Admin.	39,250	1,605	340
Defense Solid Fuels Admin.			
Coal Mine Construction	12,790	259	19
Coke Oven Construction	26,710	321	2
Defense Transport Admin.	74,855	2,133	146
Federal Civil Defense Admin.	5,106	74	39
Federal Security Agency			
Education	128,279	5,354	8
Hospitals	75,850	2,723	388
General Services Admin.	27,437	1,007	81
Housing & Home Finance Agency	78,600	3,011	48
Dept. of Interior	9,308	232	48
Maritime Admin.	121,100	2,950	194
OIT—ECA	669,484	10,114	1,746
Petroleum Admin. for Defense	1,710,375	7,775	1,240
Public Roads, Bureau of	251,525	592	172
Veterans Admin.	12,655	1,278	141
Total	6,424,600	423,066	347,042
NATIONAL PRODUCTION AUTHORITY DIVISIONS			
Agr. Mach. & Impl. Div.	541,822	9,272	7,429
Aircraft Div.	16,181	1,502	8,781
Aluminum & Magnesium Div.	15,625	...	5,346
Building Materials Div.	849,263	51,156	46,494

GENERAL CLAIMANTS	STEEL (TONS)	COPPER & COPPER ALLOYS (000 lbs)	ALUMINUM (000 lbs)
Canadian Div.	467,050	3,731	1,843
Chemical Div.	115	881	2,970
Communications Equip. Div.	43,400	43,588	2,620
Construction Machinery Div.	456,179	6,046	1,731
Consumer Durable Goods Div.	872,180	34,584	48,030
Container & Packaging Div.	1,526,396	288	19,561
Copper Div.	42,150	3,602	1,746
Electrical Equipment Div.	655,261	164,695	31,382
Electronics Div.	58,900	30,803	12,244
Engines & Turbines Div.	588,330	30,893	3,299
Facilities Bureau			
Construction Controls	18,010	504	
Industrial Expansion	583,938	29,340	10,890
General Components Div.	1,203,225	182,456	21,004
General Industrial Equip. Div.	532,568	40,860	15,369
Iron & Steel Div.	211,082	3,955	116
Leather & Leather Prods. Div.	9,833	387	388
Lumber & Wood Products Div.	6,076	131	822
Metalworking Machinery Div.	652,535	32,357	8,464
Mining Machinery Div.	135,518	3,769	269
Misc. Metals & Minerals Div.	3,561	2,351	82
Motion Pic. Photo. Prods. Div.	7,601	971	2,710
Motor Vehicles Div.	3,009,760	106,683	59,400
Ordnance & Shipbldg. Div.	105,150	9,672	928
Printing & Publishing Div.	4,700	1,058	459
Pulp, Paper & Paperboard Div.	1,001	41	26
R. R. Equipment Div.	1,599,141	84,320	4,684
Rubber Div.	32,395	3,588	954
Scientific & Tech. Equip. Div.	49,952	39,853	13,541
Service Equipment Div.	43,813	2,695	3,881
Water Resources Div.	220,415	3,131	368
Total	14,563,126	929,163	337,831



SPROUTING WINGS: Lockheed's jet trainer T-33 gets its wings in two operations which take just 8 man-hours. In the upper view, the plane's fuselage is lowered by overhead crane onto pre-assembled wings waiting in a mating jig. It takes only 10 bolt fittings to lock the wings to the fuselage. In the lower view, workmen start making scores of hose, wire and tube connections. Next the plane will sprout landing gear, tail assembly and engine

uppermost in the minds of the 2000 delegates to the 24th Annual convention of the Institute of Scrap Iron & Steel Inc. in New York last week. Government officials bluntly warned that if scrap lack cuts steelmaking operations below capacity, further drastic cuts in allotments to civilian goods manufacturers are inevitable.

Skimmed Cream—While Stanley M. Kaplan, Institute president, urged a motto of "38 million tons or bust in '52," members mulled over the many serious obstacles to the collection goal. One big difficulty: The cream has been skimmed off the top of the dormant scrap pile and a lot more digging will be necessary to pull out large tonnages of this class.

Considerable scrap that ordinarily would be coming onto the market this year already was reclaimed in the '51 scrap drive. On top of that, cutbacks in steel allotments for consumer durables are causing a sharp slump in production scrap that is not yet being offset by a flow of the material from expanding defense industries. Railroad lists have shrunk as carriers tend to delay equipment retirement.

On The Horizon—It isn't too early to think beyond the emergency, said Edwin C. Barringer, executive vice preseident of the Institute. Purchased scrap consumption doubled between World Wars, and from World War II to 1951 it increased almost 50 per per cent. The rise from 1950 to '51 was 15 per cent.

It has been clearly demonstrated that purchased scrap can be generated to support an annual steel output rate of 105 million tons and a castings production of about 15 million net tons. The burning question is whether sufficient material can be generated to support steel production at a rate of 118 million tons and castings output of 18 to 20 million tons.

What To Do About It—Clearly new scrap sources will have to be tapped. So-called "hard" scrap, material not readily accessible to transportation or requiring special treatment (like street car rails), may be the deciding factor. New approaches to the supply problem must be developed. Example: Ascendency of bundled scrap in 1951.

In 1951, for the first time in history, more bundled scrap was consumed than any other grade. It represented 20 per cent of the total, as against 18 per cent for No. 1 heavy melting steel and 14 per cent for No. 2 steel. Large proportion of bundles reflects the mechanization of the industry to process the light forms of scrap that have been rising in volume in recent years. Larger, more efficient presses and yard equipment of all kinds will be needed to meet future demand conditions.

Elected—New officers elected at the three-day convention: President, Ralph Ablon, Luria Bros., New York; 1st vice president, D. C. Holub, Holub Iron & Steel, Akron, O.; 2nd vice president, C. C. Cohen, Kansas City, Mo.; Secretary, M. L. Chase, Luntz Iron & Steel Co., Canton, O.; Treasurer, S. G. Keywell, Detroit; Executive vice president, E. C. Barringer.

Pittsburgh Gets Blooming Mill

Second step in Pittsburgh Steel Co.'s program to expand its productive capacity 50 per cent was completed last week with installation of a new 66-inch high lift blooming-slabbing mill. A new continuous hot-rolled strip mill and a four-stand cold-rolled strip mill should be installed this year. Blast furnace and open-hearth capacity will also be boosted.

Pity the Fuse Makers

Their product is a small one and vital but they're having materials problems too

IF YOU'RE exasperated because you can't get as many tons of controlled materials as you need, think how the makers of such little items as electric fuses must feel. They're having materials procurement problems too, although their requirements are relatively small.

The nation's score of fuse makers are caught between two currents: On the positive side there's an increasing demand for fuses to protect the ever growing number of electric circuits in our modern-day economy; and on what might be termed the negative side are shortages of copper, brass, zinc.

Result: Some fuse manufacturers, normally able to make prompt deliveries from stock, now require

18 to 26 weeks to fill their orders.

Stymied—Why not use substitutes for scarce copper, brass and zinc? The industry has found none that is satisfactory. Use of aluminum, for instance, as a substitute for copper has not been successful, partly because of the difficulty in soldering aluminum to other metals. Jack D. Hughes, sales manager, Littlefuse Inc., Chicago, sums it up like this: "All that could be done in the way of substitution was done years ago. It is difficult, if not impossible, to go further."

Bottleneck—One of the short-supply items is copper knife-plate used as ends of cartridge-type fuses. In mid-1951 mills could provide little of this. One manufacturer of fuses, for instance, could get none of this plate for five months. The stringency arose from the need for bus bar type copper for new aluminum plants. Only about four mills roll knife-plate. To supply the needs of the new aluminum plants, one mill was removed completely from knife-plate production and the others were cut down severely.

On and On—And the story of shortages goes on. The Electric Fuse Industry Advisory Committee told the National Production Authority that reduced allotments of controlled materials for the first quarter of 1952 will cause a shortage of electric fuses that may hamper industrial expansion. The committee stressed the importance of fuses in protecting defense plant electric circuits which may be overloaded.

Not only do defense plants put a big drain on the fuse supply, but so do many of the products those facilities make. Standing sentinel over electrical circuits in many of the Buck Rogers type of weapons is the electric fuse.

NAM Starts Monthly

U.S.A., a new monthly magazine published by the National Association of Manufacturers, will be on the news stands Feb. 26. The publication will be pocket size and carry 15 illustrated articles per issue. *U.S.A.*, says NAM, will be concerned with various policies and problems which affect America and the American people.

Steel, Coal Labor Crises in March?

At the pace the steel hearings are going, the final showdown won't come until March, when Lewis also begins his negotiations with the coal operators

LABOR fireworks may explode in March.

At the rate the steel hearings are going, it's possible that the final showdown won't come until that month, and in March John L. Lewis' United Mine Workers begin their negotiations. The miners are free to strike any time after Mar. 31.

Postponement — The steel hearings are now in the midst of a three-week postponement while the steel companies have time to prepare their case. Their representatives take the stand in New York Feb. 4. The hearings are expected to wind up about Feb. 15, which will leave the six-man hearing panel little time to reach a conclusion before the 45-day truce voted by the United Steelworkers of America-CIO ends on Feb. 24. The 45 days date from Jan. 10 when the steel hearings were first opened.

The panel's findings must be considered by the Wage Stabilization Board, so it's likely that no final decision will be made by Feb. 24. Even after and if—the panel and WSB agree on a report, more time will be needed while the union and the industry decide what action to take after they see the report.

MURRAY MAY START FIREWORKS
. . . odds are against February strike

No Strike, Immediately—But the odds are against a steel strike in February. The union's resolution authorizing the strike postponement said only that union leaders would meet after 45 days to determine what further action would be necessary. "Further action" will be to push the truce deadline into March.

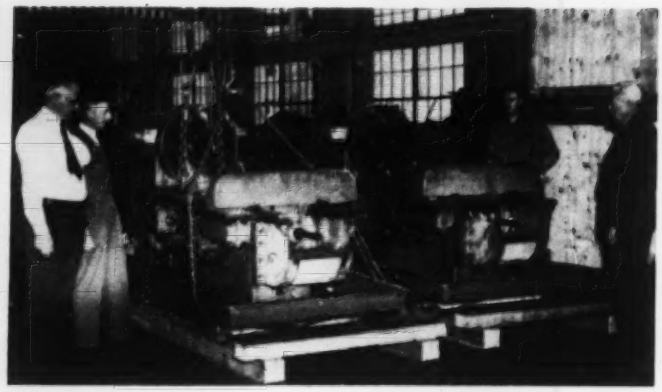
When the steel company representatives take the stand Feb. 4, their position will be about the same as that outlined to Federal Mediator Cyrus Ching in late December.

They will argue that another wage grant would start off another inflation round. They will point out that increases in workers' earnings since World War II has exceeded the gain in the cost of living in that period. They will show how a wage boost will pinch still harder steel company profits which will, in turn, mean less federal taxes and less ability to expand.

Highest Yet—On the matter of existing pay scales, the companies will show that the average hourly wage of workers in the industry was higher than ever before in November, at $1.978. The average for 11 months of 1951 was $1.941, or 21.6 cents higher than the average in the first 11 months of 1950, American Iron & Steel Institute says.

The industry's total payroll was estimated at $2630 million in the first 11 months of 1951. That exceeded the payrolls of the whole of 1950 by a margin of more than $240 million.

The estimated total employment was 675,300 in November, or 13,000 more than in October. In November, 1950, total employment was 653,000. Wage earners worked an average of 40.2 hours a week in November, compared with 41.4 in October, 1951, and 39.8 in November, 1950.



ONLY THE BEGINNING: Out of a group of subcontractors for the Gisholt Machine Co., Madison, Wis., first to make delivery of basic machines for machine tools was Cameron Can Machinery Co., Chicago. Helping to speed final delivery, Cameron makes basic machines like these Simplimatic Lathes, then Gisholt adds tooling, runs tests and makes shipment to customers

Signs of Change in Air Force Spending Program

SIGNS appear that the Air Force is shifting emphasis in its spending program. No trend is yet clearly outlined and the Air Force only explains that changes are due to "revised requirements" or "reshuffling of procurement funds."

Called off is reactivation of a government-owned plant in Chicago which was slated to turn out Fairchild C-119 Flying Boxcars. Scheduled to begin rolling off assembly lines there by October, 1952, were 165 of the cargo planes. The Air Force says the move will not effect current production of C-119s at Fairchild's plant at Hagerstown, Md., which is currently undergoing a $7 million expansion program.

Also cancelled are plans to build Boeing B-47 jet bombers at a government-owned plant in Tulsa, Okla. Douglas Aircraft Co. was to have handled this project. A projected program for building one model of jet attack planes by Douglas for the Navy was reduced too.

At the same time, the Navy approved a $22 million project under which Grumman Aircraft Corp. will construct an aircraft assembly plant and runway for jet aircraft in the Wading river area of Long Island, N. Y. The plant will be used for assembly only and not manufacturing.

Contracts awarded by the government, in excess of $250,000:

PRODUCT	CONTRACTOR
Road Rollers	Buffalo Springfield Roller Co., Springfield, O.
Fork Trucks	Clark Equipment Co., Buchanan, Mich.
Crane Shovels	Quick Way Truck Shovel Co., Denver, Colo.
	Little Giant Crane & Shovel Inc., Des Moines, Iowa
Locomotives	General Electric Co., Philadelphia
Railway Cars (3 Contracts)	Magor Car Corp., New York
	Pressed Steel Car Co., Chicago
	Thrall Car Mfg. Co., Chicago
	St. Louis Car Co., St. Louis
Medium Tanks	American Locomotive Co., Schenectady, N. Y.
Air Conditioning Units	Koce Industries Inc., Cincinnati
Centrifugal Pumps	Barnes Mfg. Co., Mansfield, O.
Portable Generators	United States Motors Corp., Oshkosh, Wis.
Paper Balers	Economy Baler Co., Ann Arbor, Mich.
Water Purification Equipment	Waterite Co., Omaha, Nebr.
Coolers	Cordly & Hayes, New York
High Pressure Air Storage Vessels	A. O. Smith Corp., Milwaukee
Aircraft Starters	Jack & Heintz Inc., Cleveland
Tank Assemblies	Fletcher Aircraft Corp., Pasadena, Calif.
Propeller Assemblies	Curtiss-Wright Corp., Caldwell, N. J.
Aircraft Hardware	Breeze Corp. Inc., Newark, N. J.
Indicators	Tornstedt Div., General Motors Corp., Detroit
M1 Barrel Blanks	Republic Steel Corp., Cleveland
Bushings	P. L. Jacobs Co., Traverse City, Mich.
Parts for Hand Grenades	Price-Pfister Brass Mfg. Co., Los Angeles
Motor Vehicle Parts	Blackstone Corp., Jamestown, N. Y.
Radio Sets	Avco Mfg. Corp., Cincinnati
Control Groups	Remler Co. Ltd., San Francisco
Electron Tubes	Sylvania Electric Products Inc., New York
	Anton Electronic Laboratories Inc., Brooklyn
Telegraph Terminals	Teletype Corp., Chicago

Piping for the Atom

A $75 million contract to install process piping and related equipment in two gaseous diffusion units at Paducah, Ky. was awarded to M. W. Kellogg Co., a refinery engineering and metal fabricating subsidiary of Pullman Inc.

The units, built in connection with Atomic Energy Commission's plant there, are similar to those built by Kellex Corp., a subsidiary of Kellogg, during World War II at Oak Ridge, Tenn. When completed Paducah gas project will be served by an $88 million steam power plant now being built by power plant which is now being built by the Tennessee Valley Authority.

York Wins Tool Contracts

York Corp., York, Pa., has begun work on two contracts, totaling well over $2 million, for special and unusual machine tools needed in the production of aircraft for the defense program.

Execution of the contracts has been assigned to the West York plant of the corporation. In addition, York is furnishing substantial amounts of its normal product, air conditioning and refrigeration equipment, for the armed forces and defense industries.

Small Plant Deals Planned

Small Defense Plants Administration says in their first quarterly report that more government procurement contracts could be channelled to small plants if there were more flexibility in awarding government contracts and more payments of price differentials in "distress" cases.

SDPA is asking the comptroller general to rule that a contract need not be given to the lowest bidder under "advertised" procurement. The use of present plant capacity, says SDPA, would be more economical for the U. S. in the long run, although initial costs may be higher.

The SDPA disclosed that it is drafting a proposal to be submitted to the Defense Department, which will spell out specific circumstances when price differentials may be paid to small business in procurement contracts.

CHECKLIST ON CONTROLS

GOVERNMENT control orders are digested or listed each week in this "Checklist on Controls." For complete copies of NPA orders, write to NPA Distribution Section, First Basement, New GAO Bldg., Washington 25. For copies of OPS orders, contact nearest OPS district or regional office. For copies of OPS news releases, write David S. Phillips, director, OPS Administrative Services Division, Temporary E Bldg., Washington 25.

Materials Orders

CONSUMER DURABLES — Amendment of Jan. 14, 1952, of NPA Order M-47B revises the flexibility provisions of this order to make them consistent with first-quarter 1952 allotments of controlled materials.

NYLON—Revocation on Jan. 15, 1952, of Schedule 4 to NPA Order M-45 ends allocation controls on plastic type nylons.

BISMUTH — Amendment of Jan. 15, 1952, of NPA Order M-48 ends all limitations on the use of bismuth. Inventory controls are retained in relaxed form. The amendment was effective Jan. 15, 1952.

METHYL CHLORIDE—Revocation of Jan. 15, 1952, of Schedule 8 to NPA Order M-45 ends allocation controls on methyl chloride.

NPA Regulation

PAPER, CHEMICALS—Amendment of Jan. 8, 1952, of Direction 3 to NPA Regulation 2 ends the use of DO ratings for procuring paper and paperboard products except by the military and the Atomic Energy Commission, and expands the list of DO ratings for obtaining basic chemicals.

NPA Delegation

CIVIL DEFENSE—Amendment of Jan. 8, 1952, of NPA Delegation 14 permits the Federal Civil Defense Administration to process applications under NPA Order M-4A for construction of buildings and projects to be used exclusively for civil defense purposes, and to make allotments and assign DO ratings under CMP Regulation 6.

Price Regulations

BATTERIES—Supplementary Regulation 6 to Ceiling Price Regulation 30 authorizes makers of lead acid storage batteries to reflect in their ceiling prices, increases in costs of lead. SR 6 was effective Jan. 14, 1952.

CAN CLOSING MACHINERY—Ceiling Price Regulation 114 issued Jan. 11, 1952, authorizes lessors of can closing machinery and equipment to increase their ceiling prices to the level of ceiling prices which the American Can Co. and the Continental Can Co. Inc. were authorized to charge. CPR 114 was effective Jan. 16, 1952.

MANUFACTURERS — Amendment 40 to Ceiling Price Regulation 22 gives manufacturers who price under the Manufacturers' General Ceiling Price Regulation (CPR 22) the option of establishing ceiling prices for their sales at retail under that regulation. Previously manufacturers were required to establish ceiling prices for their retail sales under the General Ceiling Price Regulation, even though their ceilings for sales to all other classes of buyers were determined under CPR 22. Amendment 40 was effective Jan. 19, 1952.

CONVERSION STEEL — Amendment 29 of Ceiling Price Regulation 30 and Amendment 41 of Ceiling Price Regulation 22 make it clear that manufacturers using conversion steel have a full month on which to compute added production costs as a basis for ceiling price revisions. Some manufacturers were under the impression they could use only one day—the first day of each "experience quarter." Both amendments were effective Jan. 19, 1952.

FASTENERS—Ceiling Price Regulation 118 issued Jan. 16, 1952, is a tailored ceiling price regulation covering producers of bolts, nuts, screws and rivets. It establishes ceiling prices on the basis of published list prices which a producer had in effect on Jan. 25, 1951, subject to the same discounts, differentials, terms and conditions of sale and delivery which the producer had in effect on that date. CPR 118 was effective Jan. 21, 1952.

SPRINGS, STAMPINGS — Ceiling Price Regulation 119 issued Jan. 16, 1952, is a tailored ceiling price regulation for manufacturers of mechanical precision springs, metal stampings and screw machine products. Under this regulation, ceiling prices are established on the basis of the price determining method which a manufacturer had in effect from Jan. 1, 1950, through June 24, 1950, as applied to labor and materials costs as of Mar. 15, 1951. CPR 119 was effective Jan. 21, 1952.

Army Tests Simplified Trucks

The Army hopes to make substantial savings in automotive procurement as a result of its program to simplify production of basic vehicles. Involved in the project are what the Army calls its "primary wheeled vehicles," trucks of the one-quarter, three-quarter, two and one-half and five ton types.

Tests are being run on versions of such vehicles at the Aberdeen Proving Ground, Aberdeen, Md. Other cost-saving steps taken on these trucks are relaxed specifications as to waterproofing and radio suppression—pertaining to the degree of interference to radios operated in the vehicles. Engineering changes have been made, together with substitution of less-expensive components.

Announcement of these tests follows Army Ordnance's plan to put four basic engines in production to power any of the twenty-odd land tanks, tractors and self-propelled artillery pieces now being made (STEEL, Dec. 10, p. 66).

Gray Shadows

GRAY MARKET steel prices declined in the last half of 1951, says the Senate small business committee. It thinks the threat of a steel industry strike is spreading new hope among gray market operators who anticipate a return to a seller's market.

The committee denounced the gray market as a "vicious and reprehensible" operation which deals mostly with small business. But even the nation's largest automobile firms sometimes patronized the gray market.

The report summarized testimony taken in Detroit, Chicago, Pittsburgh and Cleveland by a subcommittee headed by Senator Blair Moody (D.-Mich).

Wanted: Easy-To-Run Equipment

Too much of our present day materials handling equipment is over specialized, says the American Society of Tool Engineers. Our expanding production demands more simple machine controls so unskilled workers can operate them. Harry E. Conrad, executive secretary of the society, adds that companies polled by the society say they need more versatile equipment:

"Apparently the companies feel that they have to invest too much money and floor space in a variety of specialized types of materials handling equipment."

Lockheed Looks to Outside Supply

Lockheed Aircraft Corp. is embarking on an outside production plan to increase its volume without over-expansion. During 1952-53 the company expects to spend with outside suppliers as much as 69 cents of every dollar of manufacturing cost, compared with 52 cents being spent currently.

Backlog at Lockheed is now $1,280,000,000, comprised of $946,306,000 in firm orders and the rest in nearly-signed contracts. Military business accounts for 48.4 per cent of this total and commercial business for the balance.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

COMPONENT ALLOCATIONS *. . . it'll be simple arithmetic*

COMBING SLAG DUMPS *. . . ferromanganese in those hills*

ATOMIC ENGINEERS TRAINED *. . . send them to Oak Ridge*

TECHNICAL AID ABROAD *. . . men of industry are needed*

NEW CALCULATING setup intended to remove guesswork in determining controlled material allocations for manufacture of components has been worked out by Defense Production Administration.

It's now at a stage where questionnaires are being made up for mailing to users of components sometime in February. The reporting job to be saddled on industry will not be onerous, says DPA.

How It Works—"We will ask some 6500 manufacturers of 150 to 200 major end products to report the number and dollar value of all components used in their output of each end product in some definite period, such as the calendar year 1951," says William C. Truppner, assistant DPA administrator for production and distribution controls.

"Manufacturers will simply report to us figures already on their books. They won't have to get information from their suppliers to fill out the questionnaire. When we receive the filled-in questionnaires, we in DPA will do the rest of the work in determining materials needed for components.

Arithmetic—"We plan to do this by setting up a series of ratios showing the relation of the copper, aluminum and steel in a given component to the amount of these materials in the end product in which the component is incorporated. Then we will determine from claimant agencies how many of each end product will be needed for the military and defense-support programs. We will make allowance for the components needed in the number of all the different end products that industry will be permitted for civilian manufacture.

"It then will be a matter of simple arithmetic to allocate materials so that the output of components will meet the requirements of the end products for which controlled materials are allocated."

Early Consummation . . .

Early consummation is expected of the pending deal under which Sid W. Richardson, Fort Worth oil man, proposes to salvage manganese from slag from open hearth furnaces operating on lake ore (see STEEL, Aug. 27, p. 44; Oct. 29, p. 42).

The government is to give him fast amortization, a guaranteed market price, and priority assistance for obtaining machinery and construction materials; he will do his own financing.

Reactor Technology . . .

If you want to train your experienced engineers in the field of atomic energy, you can sponsor their enrollment in the 1952-3 session of the Oak Ridge School of Reactor Technology, Oak Ridge, Tenn. Deadline for applications is Mar. 1. The course starts Sept. 8 and will last 12 months. Many manufacturing companies enrolled men in the initial session of the school that ended last August; since then the school has been expanded to accommodate a larger class.

Men Wanted . . .

Technical Cooperation Administration is seeking men of industry to go abroad to render technical assistance aimed at industrializing underdeveloped countries. If interested, submit your application to George T. Ross, chief, Industry and Government Services Division, Technical Cooperation Administration, State Department, 1901 D street N. W., Washington 25, D.C. While most requests from foreign countries are concerned with agriculture, education, health and transportation, interest now is beginning to be shown by many countries in the establishment of new industries or improvement of existing ones.

TCA says a limited number of qualified men is needed to serve in these activities.

Pooling Approved . . .

Sixth defense pool approved by NPA's Office of Small Business as a potential defense prime contractor or subcontractor is the Illinois Manufacturers Defense Pool Inc., 209 South LaSalle St., Chicago 4.

It consists of 26 small manufacturers in the general Chicago area. Already approved are pools having headquarters at Peoria, Ill., Fresno, Calif., San Jose, Calif., Brooklyn, N. Y., and Omaha, Nebr.

Spreading Security . . .

Coverage of 11 million more individuals in the social security system would be effected under a bill to be introduced by five Democrats—Senators Lehman, Murray and Humphrey, and Representatives Dingell and Roosevelt. It would cover all members of the armed services, all permanently and totally disabled persons, all farmers and farm workers, all domestic workers not now covered and all professional self-employed. The bill also provides for substantial increases in social security benefits to all persons now covered.

Who Profits Most from the sale of a BAKER TRUCK?

MANUFACTURER? TRUCK SALESMAN? BUYER?

YOU BE THE JUDGE:

- Some time ago a **PUBLISHER** faced the need for more storage space. A Baker Truck saved him the cost of building a new warehouse by better utilization of available space, and in addition paid for itself out of savings in a few months by cutting handling costs.
- **A METAL FABRICATING PLANT** cut loading and unloading costs 75% with a Baker Truck. At the same time it eliminated the necessity for interrupting production to build a ramp and dock which would have cost the company many thousands of dollars more than the investment in the truck.
- **A CHEMICAL PLANT** quadrupled its volume without adding to its handling labor staff or warehousing capacity.
- **A SOFT DRINK BOTTLING PLANT** is saving $4,000 per 24-hour day by improved handling methods with two Baker trucks.
- In a **STEEL WAREHOUSE**, 3 men and a Baker Truck now handle work formerly requiring 6, 8 and 10 men—often with overtime.

- A large **ELECTRICAL MANUFACTURER** saves $10,000 per year in scrap-handling costs with this Baker Fork Truck with revolving head. The company earns an additional bonus of $10,000 per year by getting a better price for the scrap when sold.

These are but a few of the thousands of case histories, proving that the Baker customer profits most. Our profit and the salesman's commission are relatively small, one-time earnings. But our customers earnings go on year after year—often for more than a quarter of a century on a single investment.

Let us demonstrate
HOW BAKER TRUCKS CAN MAKE PROFITS FOR YOU

BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company
1259 WEST 80th STREET, CLEVELAND 2, OHIO • *In Canada: Railway and Power Engineering Corp., Ltd.*

Baker INDUSTRIAL TRUCKS

1902 1952

THE TEST OF TIME

TIME is relentless . . . it never stands still . . . it never moves back. Time is a test-tube, in which are mixed vision, initiative, energy, skill and experience. And from which is born *reputation.*

Living proof that this company has withstood the test of time is written in the testimonials of its customers as to its dependable service, fair dealings and quality products.

This company looks to the future with a hope for continued success in its dealings with people . . . with a deep-rooted belief in the principles of inherent honesty, initiative and progressiveness which have guided the founders and leaders of this growing organization these past fifty years!

50 YEARS OF SPECIALIZED SERVICE TO INDUSTRY

LS-22

The **Levinson** STEEL COMPANY

20TH & WHARTON STS., PITTSBURGH 3, PA.

West German Body Accepts Schuman Plan

Following ratification by the lower house of the West German legislature, the Schuman Plan seems likely to be given a tryout, beginning in 1952

AN ACTUAL tryout for the Schuman Plan sometime in 1952 seems assured as the West German Bundestag ratified the plan by a vote of 232 to 143. West German upper house, the Bundesrat, is expected to follow shortly with its approval.

After only three parliamentary debates, the West German representatives accepted the plan which already has approval of the Netherlands and France. Italy Belgium and Luxemburg, still considering the pool, seem likely to agree to it. They have little to lose and much to gain by doing so.

A Belgian senatorial commission approved the Schuman Plan, sent it to the Belgian Senate for discussion. It will be one of the first subjects to come up when the Belgian Senate resumes its sessions. The Luxemburg Parliament is not expected to move until the Belgian Parliament has declared itself.

The 50-Year Goal—The High Authority, provided for in the 50-year Schuman Plan, will aim at gradual establishment of a single market for coal and steel through gradual price and wage equalization, unification of transportation tariffs, removal of customs duties inside the pool and prohibition of double-pricing.

Widely divergent views are taken of this plan. Some see it as the first step in the political unity of western Europe into a United States of Europe. Others regard it as the first step in forming a huge intra-European coal and steel cartel.

German Chancellor Konrad Adenauer, whose support helped push the ratification through the Bundestag, answered charges that the Schuman Plan was just another Allied control on German production.

He took the stand that, once inside the jurisdiction of the High Authority of the pooling organization, Germany would be freer of outside controls since she would have an equal voice in the High Authority.

U.S. Barters for Raw Materials

One result of Prime Minister Winston Churchill's visit in Washington will be a swap of U. S. steel for Canadian aluminum and Malayan tin. Following the pattern of an agreement made last November between U. S. and Britain, the steel will be shipped to Britain in exchange for material which Britain already has on order. An estimated 400,000 tons of steel will be shipped under the agreement in 1952.

At the same time drastic cuts have been made in British steel allocations for the first three quarters of 1952, ranging from 50 per cent to 95 per cent of previous allocations. Among those notified of their 1952 allocations is the British bicycle industry which earns 25 million pounds sterling a year in foreign currency through its export trade. Bicycle makers have been cut 50 per cent.

Britain was the only important steel producing country in Europe to show a lower rate of crude steel production in 1951 than in 1950. It slipped from 18.3 million tons in 1950 to 17.5 million tons in 1951.

World Bank Loan Given Mexico

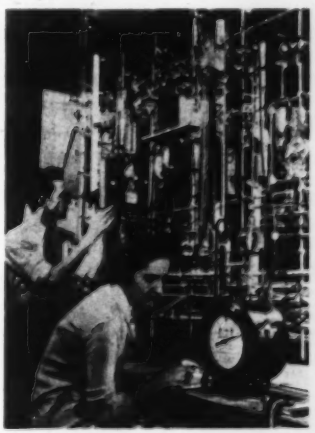
The World Bank agreed to lend Mexico $29.7 million for development of electric power. Mexico has proposed power projects at seven widely scattered points in the country.

It was the World Bank's fourth loan to Mexico in the last three years and brought World Bank credits to Mexico to $90 million.

Commercial Research: The Labs Will Hum This Year

"THE COMING year will probably be one of the greatest in history for commercial research and development," predicts Malvern J. Hiler, president of Commonwealth Engineering Co. of Ohio, Dayton.

The company completes 50 new development projects yearly and lends technical aid to more than 400 manufacturers in the U. S. and abroad.



UPSWING IN RESEARCH
. . . key is patents applied for

Timetable—Mr. Hiler says: "A definite timetable, based on the results of two World Wars, indicates that post-defense research for new products and process will hit a new peak this year." In both periods, industry required about four months to switch from civilian goods to war work after the start of a defense program. Then, for 18 months, commercial research declined. After that time, companies began to consider postwar markets and research picked up some.

At the end of each war, peacetime production and research continued at a high peak for three years before falling to normal.

That schedule has occurred during and after both World Wars, Mr. Hiler points out. "We are now at the 18-month period from the start of the Korean War, and commercial research shows signs of increasing.

One important key to that uptrend is the number of patent applications filed. In the last two months, the number of patent applications has started upward after dropping to a new low.

Up and Up—Mr. Hiler says that

the volume of research has increased after each war. "At the end of World War I, less than ½ of 1 per cent of gross sales was spent on research. Now the average is about 2 per cent, representing more than a 50-fold increase in such activity since World War I."

DPA Changes Tune

DPA still has preferred fast write off list but will treat each category with equal speed

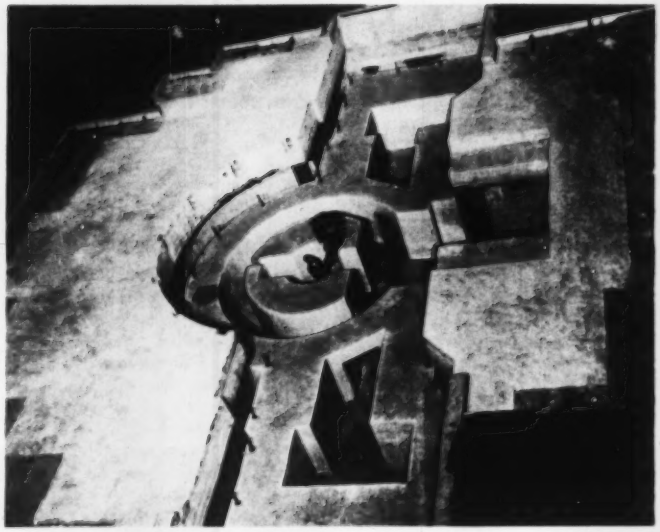
MACHINE TOOLS are still listed first on the Defense Production Administration's priority list for fast amortization allowances. But they will no longer necessarily get quicker action than any other item listed on DPA's selected list.

Heretofore fast tax write offs were acted upon according to the rank of the applicant in the DPA's selected list of ten types of projects which were to receive preferential treatment. Now the DPA has added four catagories to the selected list and says that any of the 14 will be acted upon with equal speed, but generally ahead of applications covering facilities not on the list.

More Preferred—Added to the preferential list are facilities for producing ferro alloys; projects to make chemicals, like anilene, benzene, oxygen, sulphuric acid and phenol; electric power generation and transmission facilities; and selected transportation facilities, like diesel locomotives, freight cars, barges and ore boats.

These changes in DPA policy came after certificates of necessity for fast tax write offs were granted on 563 new or expanded defense or defense-supporting facilities during the three-week period, Dec. 3 to Dec. 21. Total investment involved in the certificates is $909,032,619.

Largest amount of fast amortization allowed to any company in the DPA's latest list of certificates is $112,557,870 for iron ore production received by Reserve Mining Co., Beaver Bay, Minn. Second largest fast write off allowance goes to Reynolds Metals Co., Richmond, Va. The total amount covered by five certificates to Reynolds for aluminum, aluminum pig and aluminum forging stock facilities is $83,096,300. General Motors Corp., Detroit, received the third largest amount of fast amortization allowances. On 15 separate certificates of necessity, GM is allowed a total of $40,629,288 in fast write offs. Nearly $30 million was granted in nine certificates for new facilities to produce aircraft parts in plants in Lockport, Rochester and Syracuse, N. Y., Saginaw, Mich., Montgomery City, Vanadalia and Elyria, O., and Anderson, Ind. Percentage of fast write off for aircraft parts was 65 per cent.



JIG-SAW IN CONCRETE: About 100 tons of steel and 560 cubic yards of concrete went into this foundation for a 42-foot vertical boring mill at the General Electric Co. works in Schenectady, N. Y. It will be one of the largest known removable rail types ever built. Its heavy table measures 20 feet in diameter; a removable cross rail weighs 70 tons. GE will use the mill for machining hydro-generator stator frames and upper bearing bracket assemblies

Delco Begins $7.5 Million Plant

Ground was broken for the new $7.5 million plant of Delco Products Division, General Motors Corp., near Dayton, O. The 400,000 square-foot, one-floor building will be used for production on defense contracts of aircraft struts, power generators and machine tool motors.

The labor force for the new plant will be 90 per cent shifted from Delco's main plant in downtown Dayton. When in production about January, 1953, the operation will employ 400 persons. Many of the machine tools to be used are on loan from the Air Force. But Delco anticipates shifting some of the heavy production equipment from the main plant too.

While the plant was not designed as a dual-purpose unit, it is hoped that eventually all of Delco's operations can be moved to the new three hundred-acre plant site. This will necessitate construction of three additional units.

United Gets Sheet & Tube Job

Youngstown Sheet & Tube Co. has awarded United Engineering & Foundry Co. a contract for rolling mill equipment for its $140 million expansion in the Chicago district.

The United order involves a 56-inch tandem cold-rolling mill and two skin pass mills, costing between $3 million and $4 million, not counting the expense of electrical and other auxiliary equipment. The mills are scheduled for operation by late 1953. The cold-rolling mill will be designed so that it can be widened to 66 inches when and if the present hot strip mill at the Indiana Harbor, Ind., plant is widened to 66 inches. The

new unit will also be designed to roll strip at speeds of 3500 feet per minute and tinplate strip at 4000 feet per minute.

Youngstown is building a 1400-ton blast furnace, a 75-oven coke battery, eight 250-ton open hearths and other facilities. The first four open hearths are expected to be ready by late spring or early summer.

Chemical Expansion in Texas

A 50-million-pound a year polyethylene plant will be built at Texas City, Tex. for Carbide & Carbon Chemicals Co. Construction will begin immediately, and the plant is expected to be in operation by early 1953.

Practically all of the production of the new plant will go into the defense program. Polyethylene has many military uses, but is chiefly used in making insulation for field telephone wire, high frequency cable, and packaging.

Plastic Pipe Found Practical

Plastic pipe is being used successfully in oil fields, reports Tennessee Eastman Co., Kingsport, Tenn. The pipe is not used in oil wells or pipelines for it lacks the strength to stand the great weight in a well and the high pressures in a pipeline. Yet it is replacing steel pipe in many uses in Texas, Kansas and Illinois, says the company.

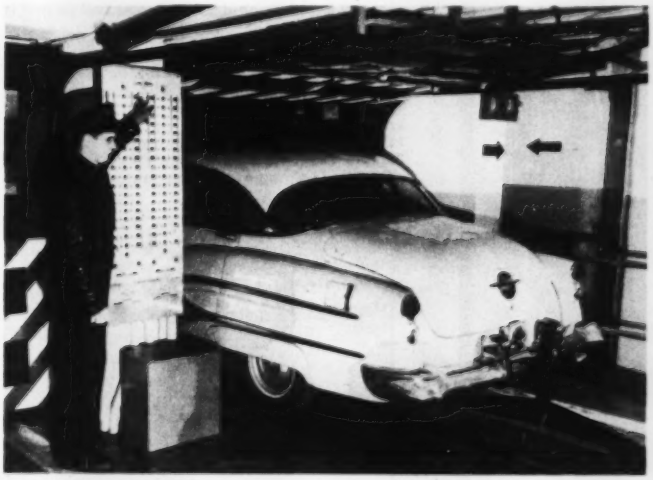
Tenite, a non-corrosive plastic, is practical for piping sour crude oil, salt water and for resisting electrolytic corrosion from soil.

NPA Brakes Locomotive Output

Fewer locomotives are on the nation's tracks today than at the time of Pearl Harbor, the Locomotive Builders Industry Advisory Committee told National Production Authority. In 1941 there were 41,438 units of all types owned by U. S. railroads. Now there are only 34,698 vehicles.

Cuts in allotments of critical materials, says NPA, will confine locomotive building to 700 vehicles in the second quarter of 1952.

The committee says such cuts will make it almost impossible for the industry to remain in business, and that locomotive building, requiring a highly skilled labor force and single-purpose plants and equipment, cannot be converted to other manufacturing. Such a shutdown, says the builders, would mean a delay of months before any increase in production would be available to move the vast armaments now being built.



PUSH-BUTTON PARKING: One answer to the nation's downtown parking problem is an automatic-parking garage which can be attended by one man. Invented by Richard L. Sinclair, San Diego, Calif., the "Park-O-Mat" operates by push-button control. A dolly, seen at lower right, adjusts itself to the bumpers of the awaiting car, hoists it up at a rapid rate, and parks it on an upper floor. The narrow 16-story Washington building has a 72-car capacity

Danger in Our Streams

The water pollution increase may mean that the U. S. will step in eventually

The Korean War has thrust the water pollution problem into the background while bringing an increase in industrialization, which in turn is increasing the danger of pollution of the nation's streams.

A pollution load equal to an untreated amount caused by 150 million people is floating down our streams and rivers, despite 9000 treatment plants, says Federal Security Agency's Public Health Service. Half the load is industrial wastes. Only one-fourth of industries discharging wastes have some treatment facilities.

Pitching In—Many metalworking industries are pitching-in with district, state, and local water commissions by installing more methods to treat industrial wastes. Among these are new methods in neutralizing acids, removing metals, and removing waste liquors derived from chemical and electrochemical surface treatment of metals. Steel producers are installing oil skimmers and catchers for flue dust from blast furnaces which would have settled in cooling streams.

The water pollution problem being as serious as it is, there is an increasing belief that industry must take initiative and hold itself responsible for the development of methods of treating wastes.

To encourage industries in the construction of waste treatment plants, changes in tax regulations are being proposed. The Ohio River Valley Water Sanitation Commission recently endorsed the Byrnes bill (H. R. 5474) now before House Ways and Means Committee. The bill proposes a change in federal income tax laws to permit quicker write off of costs incurred in the installation of such facilities.

The President's Water Policy Commission in 1948 said that the water pollution problem is bound to deepen as population and industry grow. The federal government now acts only in co-operation with state water commissions, but if we don't have clear streams by 1958, the commission says, the federal government should step in.

N-A-X HIGH-TENSILE STEEL

means less weight with no loss of strength or quality

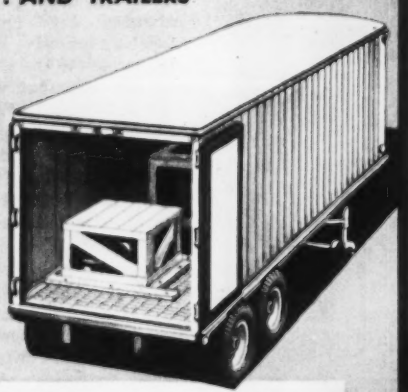
FOR BUSES . . .

The greater strength and toughness of N-A-X HIGH-TENSILE steel permits reductions of up to 25% in section without sacrificing durability or safety of product.

TRUCKS . . .

Through the use of this low-alloy, high-strength steel, with its enhanced resistance to corrosion, less dead-weight in military and civilian transportation equipment means greater payloads and longer life.

. . . AND TRAILERS



N-A-X HIGH-TENSILE steel, with its high degree of cold formability and excellent welding properties, permits a manufacturer of transportation equipment to fabricate it with the ease of mild carbon steel.

These few examples illustrate the use of N-A-X HIGH-TENSILE steel in transportation equipment. By utilizing its increased strength and toughness, its greater resistance to corrosion, abrasion and fatigue, its excellent response to fabricating and welding, more products can be made from the same tonnage of steel—an important contribution to conservation.

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division • Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom

That expensive show, introduction of new auto models, is over for much of the industry. Chevrolet figures it cost more than $4.5 million just to announce its entries

DETROIT

THAT LOUD noise you heard in the last few days was a sign of relief being heaved by the sales chiefs, merchandising experts, and publicity release writers for much of the automotive industry.

The once-a-year agony of paving the way for a new model's introduction was ending with an orgy of newspaper ads, Klieg-lighted showrooms, canopied entrances, and free orchids to the ladies.

Expensive Show—Some indication of the cost of the show has been given by one of the sigh-heavers. W. E. Fish, Chevrolet general sales manager, says that General Motors Division is spending over $1 million this year for announcement ads; its dealers will spend an additional $1 million plus about $2.5 million for their showroom trim.

Supremely aware of its enviable position as top-seller for 12 consecutive peacetime years, Chevrolet will be trying to keep on top of the heap this year with a car which superficially has been changed very little. Appearancewise, the Chevrolet has a reworked grille, broadened parking lamps, and a new stainless steel gravel shield.

Invisible Changes — Three important changes in the car are not visible. A new three-point mounting of the engine, one of these, gives greater vibration damping characteristics. The shock absorbers were also redesigned, so that compression control starts earlier and the quicker reaction damps wheel and body movements more effectively.

The Unseen for Buick—Buick likewise has concentrated on the unseen things to make its '52 models new. A four-barreled carburetor is one of the most important. A development which has taken 12 years, the new carburetor actually is two carburetors in one, with the primary unit functioning at all times and the secondary system beginning to function only when the throttle is opened beyond the half-way mark.

Auto, Truck Output
U. S. and Canada

	1951	1950
January	645,688	609,882
February	658,918	505,596
March	802,737	610,678
April	680,281	585,707
May	695,898	732,164
June	653,682	897,852
Six Mos.	4,137,204	3,941,878
July	522,858	746,801
August	571,442	842,235
September	505,758	760,848
October	548,350*	796,012
November	480,323*	633,876
December	391,272*	671,621
Week Ended	1951	1950
Dec. 22	107,126	161,033
Dec. 29	39,488	135,239
	1952	1951
Jan. 5	53,601	100,072
Jan. 12	94,799	139,787
Jan. 19	103,000*	162,485

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

The new carburetor, together with new manifolding and an increase in compression ratio from 7.2 to 1 to 7.5 to 1, boosts the Roadmaster's 310-cubic inch in-line eight-cylinder engine from 152 horsepower to 170 horsepower. The upped compression ratio is achieved by milling a slice off the cylinder head.

Power Steering—Offered as optional equipment on the Roadmaster is a power steering unit, built by GM's Saginaw Steering Gear Division. The unit consists of a conventional recirculating ball nut manual steering gear combined with a hydraulic booster pump linked to the pitman shaft through a separate set of gears and controlled by a valve built into the steering gear. The pump is driven by a belt off the crankshaft.

When the engine is running, oil circulates freely through the hydraulic system until four or more pounds of pressure is applied to the steering wheel. When steering becomes this hard, a valve is actuated to divert oil into one end of a hydraulic cylinder which then assists in moving the front wheels. The pump builds up only the necessary pressure to overcome the resistance of the pitman shaft.

The Feel of the Road—This, plus the fact that the system comes into play only when steering effort exceeds four pounds, is a fundamental difference between this unit and Chrysler's power steering. Buick people claim that the Saginaw system allows the "feel" of the road to be maintained.

Hudson Uses Stainless Lavishly

The new Hudson line is notable chiefly for lavish use of stainless steel trim. In most models the effect of "hardtop convertible" styling is simulated through use of expanses of stainless steel around the windows and roof posts. Below the belt line new rub rails and additional trim front and rear are designed to accentuate the car's low and long look.

A new model, christened "Wasp" and designed as a lower-priced running mate to the "fabulous Hudson Hornet," has been introduced using the Commodore Six's engine which develops 127 horsepower with a displacement of 262 cubic inches, and with a compression ratio of 7.2 to 1 with extra-cost optional aluminum head or 6.7 to 1 with the standard iron head.

New Willys in Class by Itself

The first all-new car of the year's parade is Willys-Overland's "Aero Willys."

It is a car in a class by itself. It's light—one model's dry shipping weight is 2570 pounds. It's high powered in relation to size—a six-cylinder "F" head engine with 161 cubic inch displacement and 7.6 to 1 compression ratio develops 90 horsepower. It's only inches shorter than most standard size cars—wheelbase is 108 inches and overall

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length is 181 inches. It's economical to operate—test runs at 30 miles per hour with an overdrive car resulted in 35 miles per gallon.

Pictured in STEEL, Dec. 10, p. 73, was the Aero Wing model, a super deluxe two-door six-passenger sedan which carries an f.o.b. Toledo list retail price of $1824.50. The Aero Ace, a custom two-door with a hardtop-type, wrap-around rear window, lists at $1903.50. Third model, not yet in production, is the Aero Lark, price $1585.50.

Ford Opens Doors on Its New Engineering Setup

HENRY FORD II threw open the doors of the inner sanctum, his engineering laboratory, to the nation's press and allowed the newsmen to take a look at how Ford Motor Co.'s present and future cars are designed, tested, engineered.

Ford's engineering staff in 1946 numbered 1400. Today more than 4300 are in it. They man a brain center at Dearborn, Mich., which is being augmented with a $50 million research and engineering center, announced in 1946 and still building.

Construction—Six new buildings are involved. Now nearly completed is the dynamometer laboratory building which will also house Ford's new scientific laboratory. Engineering building "B," containing 300,000 square feet will be completed late this year and will be the styling and engineering design and showroom center. An engineering test building, adjacent to the test track, and a complete maintenance building to house equipment and shops for the engineering department are also under construction.

These are part of Ford's postwar program which thus far has cost $700 million and has brought its manufacturing capacity to a point almost 50 per cent greater than in 1946.

Engines—Seen at the open house were the two new engines appearing in the Ford Six and the Lincoln. Described by Earle S. MacPherson, chief engineer, as "the opening guns in a long-range program designed to provide all Ford products with lighter, more powerful engines," both are overhead valve engines, the in-line six developing 101 horsepower, and the Lincoln V-8 developing 160 horsepower. The Ford V-8 engine has been souped up to 110 horsepower while the Mercury V-8 for 1952 will develop 125 horsepower.

Newsmen saw how, in preparing for manufacture of 1952 cars, Ford determined to engineer the traditional new model "bugs" out at the beginning. One big help toward achieving that aim was the adoption of Kirksite dies for all the stampings of its pilot models.

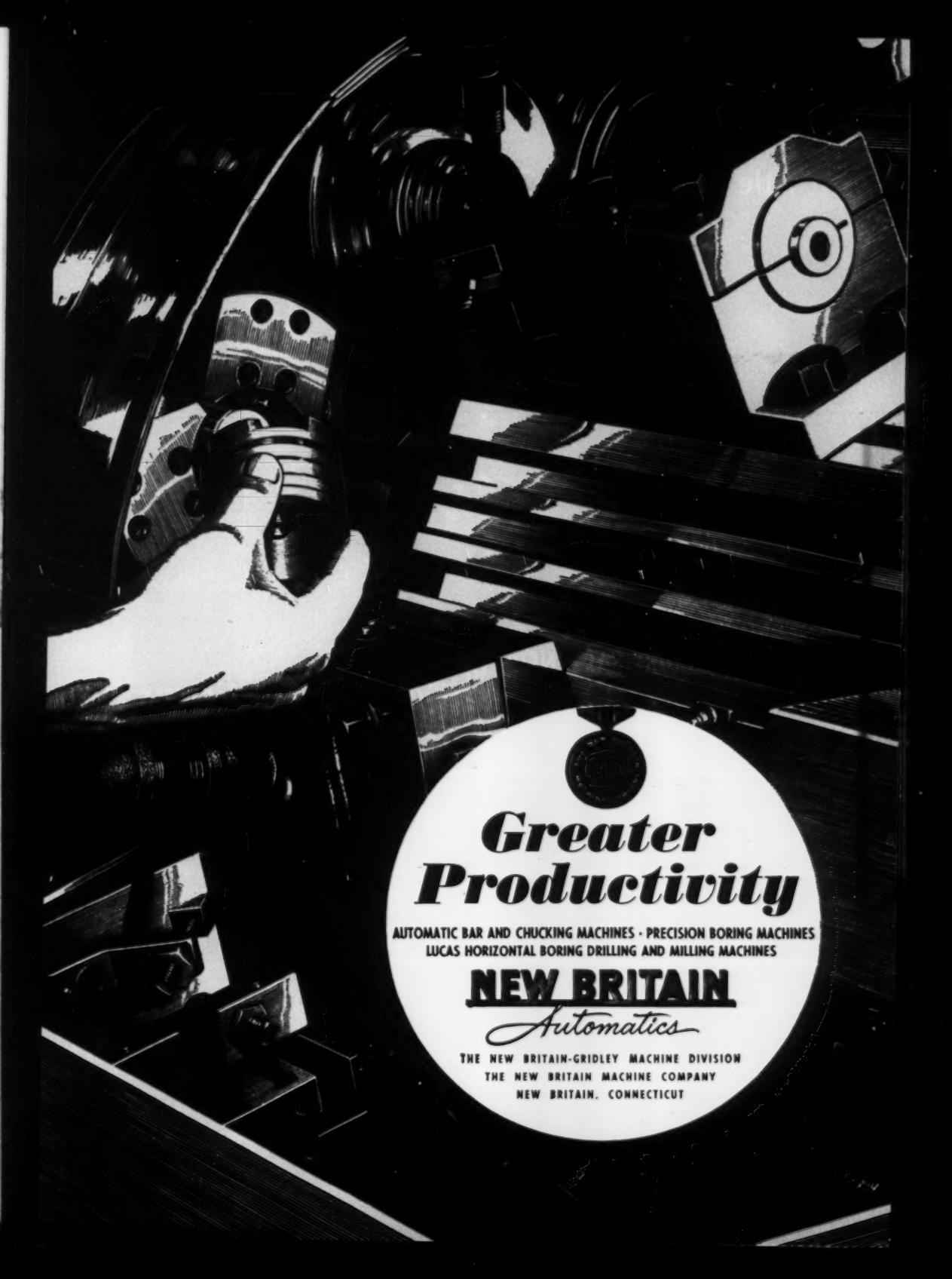
By Hand—Traditionally in new automobile models the industry reverts to hand-hammering its sheet metal parts over hand-made mahogany die-molds. This process, Ford engineers say, produces weakness in body panels and thins the metal in patterns not conforming with those which are mass produced. The Kirksite zinc-based alloy dies are readily cast in plaster mates of the mahogany die-molds and are used for limited quantity runs of stampings with same accuracy as production parts will have.

Ford set up a stationary "assembly line" in its experimental vehicle fabricating shop where jigs and fixtures basically identical with those to be used in mass production could be operated.

Shell Molding—Products of another new manufacturing technique also will show up in the new models. Shell-molded valves and crankshafts, requiring little machining because of their good finish and close dimensional accuracy, were on display.

A thorough redesign of parts and components was everywhere in evidence. Many of the changes which have been adopted save critical metals; all, it appears, save on costs. The door lock is an example of a re-engineered part which saves both ways. Where the unit formerly contained 30 parts, the new one performing all the old functions, has 20. Powdered metal is used in the lock's gear shaped rotor which previously had been die cast. Where formerly the V-8's radiator required 20.7 pounds of copper, the new one uses 17.3 pounds, and an experimental copper-clad steel radiator consumes only 13 pounds. Another redesign is of the heater-ventilator. Its core is 25 per cent smaller, 30 per cent lighter, operates at a 10 per cent higher temperature.

BODY BEAUTIFUL: At Ford Motor Co.'s $500,000 Dearborn experimental assembly line, technicians are shaping a new body for one of 73 pilot models of the 1952 Lincoln. Floor pan, side assemblies and roof panel assemblies are welded into the complete Lincoln body shell in this final assembly fixture. A pilot model costs about $75,000 to build


Greater
Productivity
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LUCAS HORIZONTAL BORING DRILLING AND MILLING MACHINES
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36,000 FASTENERS OF EACH B-36 CALL FOR VARIETY OF SHARON* STEELS

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Industry recovers ground but still can't match last year's production pace as civilian production losses aren't being made up by defense output

CUSHION of defense is stabilizing industrial activity but isn't making up for losses sustained by the still-important civilian market.

Production reports for the first weeks of 1952 tend to be misleading because they show quick recovery from holiday slumps. If adjusted for seasonal variation, the trend line would be nearly flat, and slightly below year-ago levels.

Civilian Pattern—In stretching the arms load into 1954, defense planners are yielding officially to political pressure. Policy as laid down by the Defense Production Administration is that nonessential industries won't be strangled completely unless total war develops. This ruling will confer greatest benefit on the least essential civilian industries in allowing them enough metals for survival.

Second-quarter civilian goods cutbacks, advertised at 10 per cent of present volume, may be relaxed or modified substantially before they go into effect. The furor over unemployment in auto plants underscores this fact: In an election year, political expediency will often govern policy decisions.

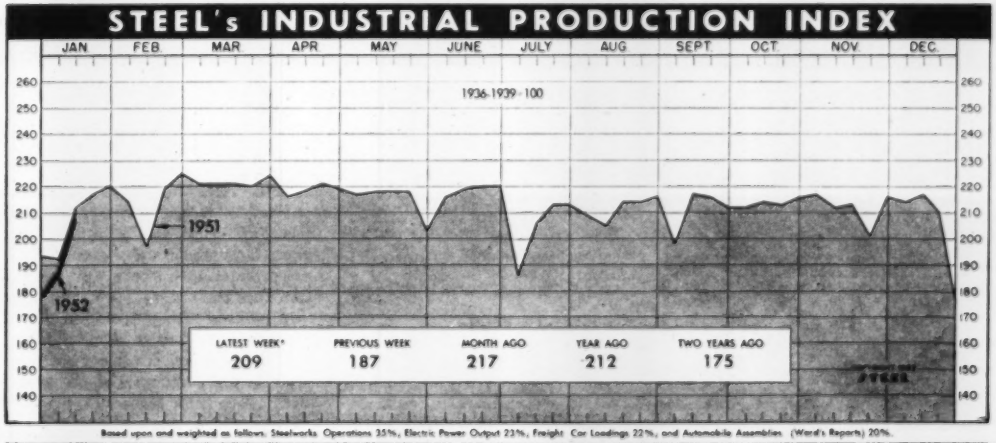
Index Gains — Components of STEEL's industrial production index show the impact of the defense load on our economy. Basic industrial activity — represented by steelworks operations and electric power output — set new records time and again in the last year. Freight carloadings (an indicator of trade tempo) rose 4 per cent in '51 and are expected to move higher this year, but have been under year-ago marks since early December despite favorable weather. Auto output figures show the millstone of controls dragging down civilian production. Because of the lag in the civilian components, STEEL's weighted index has been below year-ago levels for five consecutive weeks. In the latest indexed week (the one ended Jan. 12), the index continued its rebound from New Year's lows with a 22-point jump from 187 to 209 per cent of the 1936-1939 average, but couldn't match the 212 of last year's comparable week.

Tremendous Loss...

Roadblocks of strikes and severe scrap shortages loom in the path of the steel-producing industry. Each week of shutdown would mean loss of over 2 million tons of steel. Translated into finished products of steel, the loss would be tremendous. Last week (ended Jan. 19) was the nineteenth consecutive one of over-capacity operations. American Iron & Steel Institute calculates the national ingot rate equivalent to 2,051,000 net tons of ingots and casting steels. That's a 10,000-ton increase over the previous week and 60,000 more than the comparable week last year.

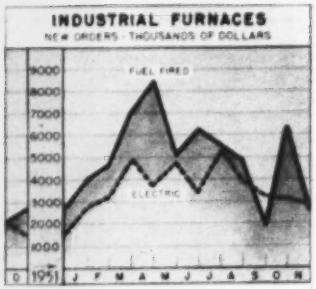
Need for Acceleration...

Back in its five-day work harness, the auto industry finds it must step up operations over current daily rates to achieve its January production goal of 316,000 passenger car and 99,000 truck completions. With inventory taking, model changeovers and other work-slowing operations completed, all producers returned to full operations in the week ended Jan. 12. Their return was evidenced by an 80 per cent gain in assemblies. *Ward's Automotive Reports* figures total U.S.-Canadian production in that week at 94,799 cars and trucks, compared to 53,601 the week before and 139,787 in the corresponding week last year. Trend toward higher pricing



Based upon and weighted as follows: Steelworks Operations 35%, Electric Power Output 23%, Freight Car Loadings 22%, and Automobile Assemblies (Ward's Reports) 20%.

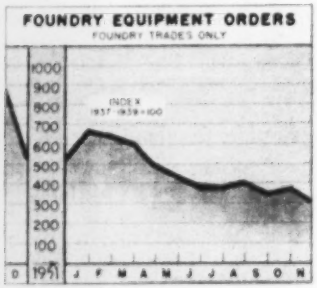
*Week ended Jan. 12



Industrial Furnaces
New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1951	1950	1951	1950
Jan.	4,033	1,914	2,764	473
Feb.	4,670	616	3,212	697
Mar.	7,019	1,300	4,846	753
Apr.	8,497	837	3,657	415
May	5,044	1,392	4,766	982
June	6,259	1,165	3,370	1,328
July	5,303	2,247	5,587	1,445
Aug.	4,550	3,927	3,891	1,039
Sept.	1,821	1,817	3,250	1,485
Oct.	6,374	2,306	3,172	1,603
Nov.	2,516	2,068	2,882	2,157
Dec.	....	2,749	....	1,505

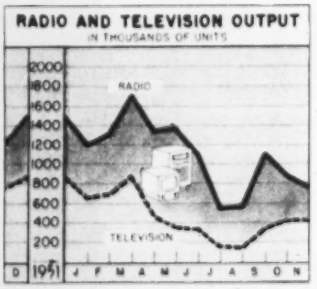
* Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.



Foundry Equipment

	Index		Value in Thousands	
	1951	1950	1951	1950
Jan.	668.0	159.3	$3,075	$731
Feb.	638.6	113.1	2,940	519
Mar.	599.0	225.2	2,758	1,034
Apr.	490.1	160.6	2,256	737
May	431.7	294.9	1,987	1,353
June	393.2	622.7	1,810	2,858
July	390.3	401.8	1,797	1,844
Aug.	404.5	693.6	1,862	3,183
Sept.	346.5	483.8	1,595	2,220
Oct.	372.4	526.8	1,714	2,417
Nov.	305.5	885.5	1,406	4,077
Dec.	....	526.2	....	2,412

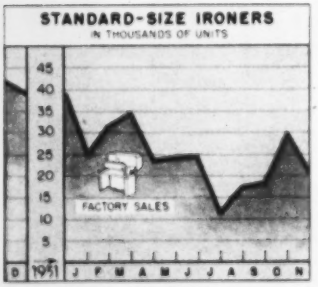
Foundry Equipment Mfrs. Assoc.



Radio and Television Output
Thousands of Units

	Radio		Television	
	1951	1950	1951	1950
Jan.	1,203	935	646	439
Feb.	1,313	1,059	679	480
Mar.	1,720	1,340	875	687
Apr.	1,337	1,254	469	543
May	1,373	1,245	339	486
June	1,083	1,491	327	502
July	548	666	152	327
Aug.	563	1,304	147	721
Sept.	1,100	1,335	337	844
Oct.	875	1,230	412	838
Nov.	748	1,216	415	739
Dec.	....	1,506	....	858
Total	....	14,590	....	7,464

Radio-Television Mfrs. Assoc.



Standard Size Ironers
Factory Sales—Units

	1951	1950	1949
Jan.	24,600	20,300	28,300
Feb.	32,400	27,600	28,400
Mar.	34,700	37,800	23,800
Apr.	23,700	31,600	18,100
May	24,200	27,400	19,500
June	24,500	27,100	21,100
July	11,100	25,100	17,700
Aug.	17,200	42,700	32,300
Sept.	18,300	41,400	27,700
Oct.	29,800	47,500	36,045
Nov.	20,500	41,900	33,000
Dec.	....	38,800	19,400
Total	....	409,200	307,345

American Home Laundry Mfrs. Assoc.

Charts—Copyright 1952, Steel.

Issue Dates of other FACTS and FIGURES Published by STEEL:

Construction	Dec. 10	Indus. Production	Jan. 14	Refrigerators	Dec. 24
Durable Goods	Oct. 8	Machine Tools	Jan. 14	Steel Castings	Dec. 31
Employ., Metalwkg	Nov. 12	Malleable Castings	Dec. 31	Steel Forgings	Dec. 31
Employ., Steel	Dec. 10	Prices	Jan. 14	Steel Shipments	Dec. 17
Fab. Struc. Steel	Nov. 12	Pumps	Dec. 10	Vacuum Cleaners	Dec. 3
Freight Cars	Dec. 31	Purchasing Power	Oct. 8	Wages, Metalwkg	Oct. 22
Gear Sales	Dec. 17	Ranges, Gas	Dec. 24	Washers	Jan. 14
Gray Iron Castings	Dec. 31	Ranges, Elec.	Dec. 24	Water Heaters	Dec. 24

ground by automakers is prompting speculation over whether producers will follow through and boost prices to the limit allowed. Their actions on price will be a giveaway on sales prospects within the industry.

No Sharp Turns Ahead. . .

First-quarter business will follow the trends already established, Purchasing Agents Association of Chicago concludes after a survey of members. Buyers (their actions often anticipate future business turns) indicated that December production dipped for the second month in a row, prices seemed to be stabilized at a high level and the slow trend toward reduction of employees halted. Marked improvement in deliveries was indicated and the trend toward lower inventories seemed to be ended. When asked whether they could produce all they could sell if raw materials were available, 80 per cent of the purchasing men said "yes" and 20 per cent "no."

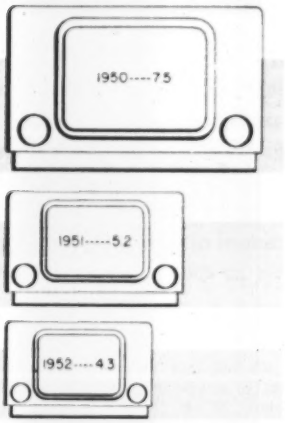
One Year's Work. . .

On Jan. 1, freight car builders and railroad and private car line shops had unfilled orders amounting to well over one year's production: 123,127 cars. In December they delivered 8458 new domestic cars; 9824 were built in November, 1951, and 5700 in December, 1950. Orders for 3309 new cars brought the year's total to 96,190, more than the full year 1951 production mark of 95,943 cars.

Tightening Screws. . .

Tightening screws on civilian production is evidenced by production figures of electric refrigerators and ranges, radio and television. Of the four, only TV showed a monthly increase unitwise, and that was slight. Forecasts indicate the television receiver production picture for '52 is dim (see the chart). A recent survey showed there are more than 15 million TV sets in use today. That's about one for every ten persons in the country, and compares with more than 100 million radios currently in use. Estimates on 1952 production range from 4 mil-

TV Production Picture Fades



Yearly production in millions of units. Source: Radio-Television Manufacturers Association. 1952 estimated.

lion to over 5 million, with the average being about 4.3 million.

Deflation Note. . .

Total business inventories, valued at $70.9 billion at the beginning of December, dropped almost $150 million in November. Because of lower replacement costs at the manufacturing level, there was actually a small increase in physical holdings. Manufacturing inventories rose slightly, while wholesale and retail inventories dipped.

Less Pocket Money. . .

Personal income in November slipped below the October rate, says Office of Business Economics. At an annual rate of $257 billion, it was slightly higher than September and well above the rate of the year-to-date ($250.5 billion). Private industry wages and salaries, at an annual rate of $141.5 billion, continued stable; since April they have risen only $1 billion, says the government agency.

Trends Fore and Aft. . .

Unemployment will increase substantially in the second quarter, says Commerce Secretary Sawyer . . . The nation's total petroleum demand is estimated by the Petroleum Administration for Defense at 7.8 million barrels a day in 1952, a 4.6 per cent increase over 1951. . . Jobless pay reserves of the states are at an all time high. . . Business volume for the gearing industry decreased by 24.7 per cent in November. . . New business incorporations in 1951 were smallest number for any postwar year. . . Railroads, after looking at their slipping net income reports, are renewing their fight for freight rate increases.

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	101.5	102.0	97.5
Electric Power Distributed (million kwhr)	7,666	7,149	6,981
Bituminous Coal Output (daily av.—1000 tons)	1,522	1,295	1,671
Petroleum Production (daily av.—1000 bbl)	6,210[1]	6,187	5,762
Construction Volume (ENR—millions)	$280.7	$159.1	$415.8
Automobile, Truck Output (Ward's—units)	94,799	53,601	139,787
TRADE			
Freight Car Loadings (unit—1000 cars)	750[1]	613	783
Business Failures (Dun & Bradstreet, number)	164	126	193
Currency in Circulation (millions)[3]	$28,800	$29,143	$27,415
Dept. Store Sales (changes from year ago)[3]	−21%	+11%	+39%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$17,764	$17,897	$17,198
Federal Gross Debt (billions)	$259.1	$259.4	$256.0
Bond Volume, NYSE (millions)	$14.3	$11.2	$27.2
Stocks Sales, NYSE (thousands of shares)	8,331	5,700	17,362
Loans and Investments (billions)[4]	$74.2	$74.9	$71.2
United States Gov't. Obligations Held (billions)[4]	$32.2	$32.5	$33.3
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	171.92[1]	171.92[1]	171.92
STEEL's Nonferrous Metal Price Index[6]	234.9	234.9	255.8
All Commodities[7]	177.2	177.2	179.2
Metals and Metal Products[7]	190.8	190.9	186.9

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons; 1951, 1,999,035. [3]Federal Reserve Board. [4]Member banks, Federal reserve system. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1926=100.

COLD HEADED—ROLL THREADED

Special Fasteners and Small Parts are Better

A greater variety of fasteners and small parts that can be made faster, stronger and more economically by Pheoll's cold heading and roll threading methods. Cold working of wire stock often surpasses turning, casting, stamping, drawing or molding.

LOWER MATERIAL COST . . . Cold-heading results in much less scrap than in metal cutting operations, in fact in the production of most cold-headed parts there is little or no scrap.

LOWER PRODUCTION COST . . . due to high production rate. Cold-heading . . . entirely automatic, is not affected by operator skill, strength or fatigue.

LOWER DIE COST . . . Cold-heading dies cost less, even on more intricate sections, than for *any other forming operations.*

INCREASED TENSILE STRENGTH . . . Improved physical properties are imparted to all metallic fasteners by cold working.

GREATER TOUGHNESS and FATIGUE RESISTANCE . . . because grain flow of material is compacted and directed to follow contour of piece.

UNIFORMLY HIGH QUALITY PARTS . . . assured because cold working requires materials free from structural defects.

Single or multiple secondary operations can be performed on cold headed parts to produce special characteristics required to fit the part for its particular application. Such operations include drilling, tapping, milling, shaving, flattening, notching, flanging, trimming, bending, off-setting, slotting, fluting swaging, knurling, pointing, heat treating, plating and finishing—all in Pheoll's modern plant.

PHEOLL PROFIT PRODUCING FASTENERS

Machine Screws
Phillips Recessed Head Screws
Sems
Thread Cutting Screws
Tapping Screws
Cap Screws
Threaded Rods

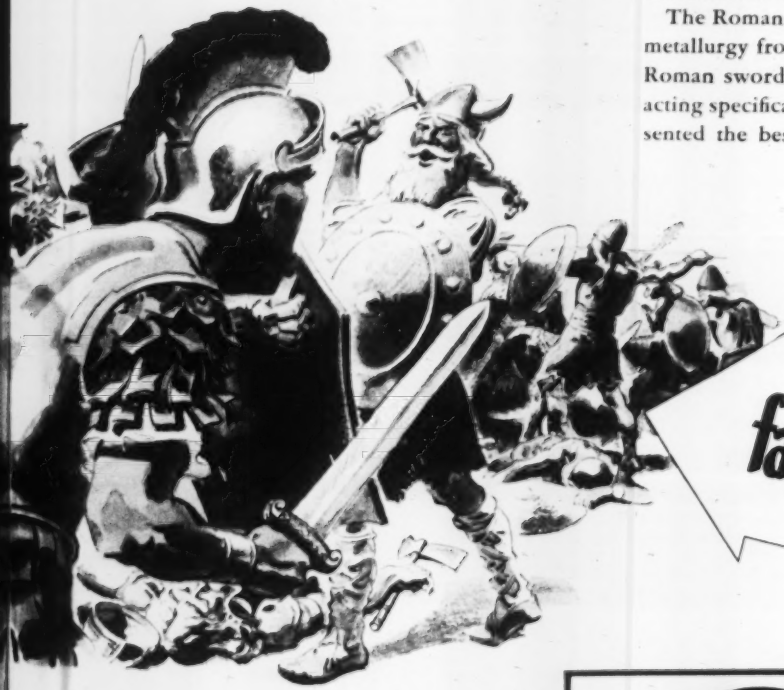
Pheoll MANUFACTURING COMPANY
5700 ROOSEVELT ROAD
CHICAGO 50, ILLINOIS

Industrial Fasteners and Holding Devices

The sword of CAESAR'S LEGIONS
Strong blades that won an empire

The swords of Caesar's legions were superior weapons. The Roman sword possessed a thick, heavy blade that was effective in delivering either a cutting or thrusting stroke . . . and, it could withstand battering against the armor of the enemy.

The Romans improved their knowledge of metallurgy from the nations they conquered. Roman swords were forged to the most exacting specifications of their time. They represented the best in efficiency and durability.



famous blades

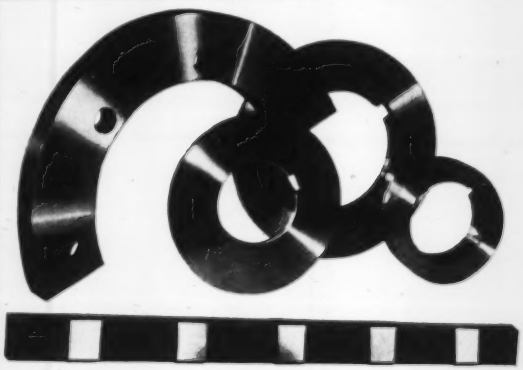
Heppenstall SHEAR KNIVES
Strong blades that win results for industry

Like the blades of ancient Rome, the modern Shear Knives made by Heppenstall are continually improved through technical development.

Users of Heppenstall Knives obtain exceptional service as represented by the following advantages:

- MORE CUTS BETWEEN GRINDS
- MORE UNITS PER BLADE
- LOWER OVERALL BLADE COST
- INCREASE IN PRODUCTION

Your shearing and trimming operations can also benefit through Heppenstall Shear Knives. Make them your standard specifications for increased efficiency and lower overall costs—today.



Heppenstall

the most dependable name in forgings

PITTSBURGH 1, PENNSYLVANIA

Sales offices in principal cities

Men of Industry

At the Cuyahoga Works, Cleveland, of **American Steel & Wire Division,** U. S. Steel Co., **Walter L. Longnecker** was named general superintendent succeeding **Nelson W. Dempsey,** who was appointed assistant manager of operations in the Chicago district. **Earle L. Chamberlain** was appointed division superintendent of the hot mills at the plant to succeed Mr. Longnecker, and **William B. Dawson** assumes Mr. Chamberlain's former post of department superintendent, hot rolling. Appointments affecting sales officials in New York and Philadelphia district sales offices of the wire division include: **W. W. Deal,** named New York district sales manager to succeed the late **W. E. Mackley; L. L. Anderson,** named Philadelphia sales manager and **R. W. Drake,** assistant sales manager.

Charles K. Olson was appointed assistant general manager, **National Supply Co.'s** engine division, Springfield, O. For the last 19 years he was with Whitcomb Locomotive Co. **J. D. Myers** was named general superintendent. **C. W. Palmer** was appointed manager, Toledo, O., plant products, responsible for planning, scheduling and purchasing departments.

Cleveland Graphite Bronze Co., Cleveland, appointed **C. A. Williams** sales manager, original equipment division; **R. E. Mooney,** Cleveland district sales manager; **Wilmer D. Cowgill,** Detroit sales manager.

Dean C. Webster was elected assistant vice president, **Standard Railway Equipment Mfg. Co.,** with headquarters in New York.

Arthur A. Merry was appointed chief of advanced tool engineering, a newly created position of **Pratt & Whitney Aircraft Division,** United Aircraft Corp., East Hartford, Conn. **E. P. Bullard** was named chief of production engineering. **Leete P. Doty** was named superintendent, North Haven, Conn., plant, and is succeeded by **W. G. Emond** as superintendent, Southington, Conn., plant.

Following reorganization of sales territories of **Lunkenheimer Co.,** Cincinnati, **Melvin W. Pauly** is sales manager, eastern division, **Harold H. Layritz** of the central division, and **Charles W. Burrage** of the western division.

J. A. CUNEO
Fairbanks-Morse gen. sales mgr.

THOMAS J. MOORE JR.
. . . gen. mgr., Brainard Steel Division

Changes in the **Fairbanks-Morse & Co.** sales organization include: **J. A. Cuneo,** formerly manager, Chicago branch, promoted to general sales manager. **H. L. Hilleary** continues as assistant sales manager, and **Milo C. Roy,** manager, Omaha branch, was named manager, Chicago branch. **J. W. Wright** was appointed manager, Omaha branch; **C. E. Dietle,** manager of the diesel sales division; **W. B. Wylly,** manager of the Atlanta branch; **L. A. Weom,** manager of the St. Paul branch succeeding **A. C. Thompson,** retired; and **Clifford J. Schroeer** succeeds Mr. Weom as manager, St. Louis branch.

Detroit Automotive Products Corp., Detroit, appointed **I. M. Hagglund** manager, sales department, and **G. W. Pollard** service manager.

O. J. Myers fills the newly created position of technical director of the Foundry Products Division, **Archer-Daniels-Midland Co.,** Cleveland. He is succeeded as director of foundry research by **J. David Johnson.**

Millard Romaine was elected a vice president, **Cincinnati Milling Machine Co.,** Cincinnati. **Philip H. Cone** succeeds Mr. Romaine as secretary. Mr. Romaine continues as president of Cincinnati Lathe & Tool Co., acquired in 1945 by the milling machine company.

W. A. Hibler was appointed vice president, **Tube City Iron & Metal Co.,** Glassport, Pa.

Albert K. Papp was appointed sales manager, **Fairmount Steel Co.,** Cleveland.

Sharon Steel Corp., Sharon, Pa., elected **Thomas J. Moore Jr.** general manager of the Brainard Steel Division, Warren, O. Mr. Moore was vice president of Brainard before the recent designation of Sharon Steel's subsidiaries as operating divisions. **E. T. Sprouil,** formerly president of Brainard, will serve as chairman of the management committee, and **William J. Keegan,** formerly secretary and treasurer, is now assistant general manager.

General Motors Corp., Detroit, elected **Dr. Karl T. Compton** a member of the board, and **Gen. Lucius D. Clay** a member of the financial policy committee. General Clay succeeds **John L. Pratt,** who remains on the board of directors. Changes in GM's research laboratories division include **Alfred L. Boegehold** as assistant to the general manager. He succeeds **E. V. Rippingille Sr.,** retired, but who is retained in a consulting capacity. **Dr. Robert F. Thomson** succeeds Mr. Boegehold as head of the metallurgy department. **Cleveland F. Nixon** heads the electrochemistry department, succeeding **William M. Phillips,** who will continue on the research laboratories executive staff until his retirement in September.

Frederick A. W. Stiefler, former director of public relations for Bethlehem Pacific Coast Steel Corp. in Southern California, joined the Los Angeles staff of **Hill & Knowlton Inc.** He will devote full time as director of public relations in charge of western regional operations for Aircraft Industries Association.

J. K. Stafford, who resigned from Re-

public Steel Corp. after 35 years' association, joined **Atlantic Steel Co.**, Atlanta.

Fred P. Biggs was elected a vice president, **American Brake Shoe Co.**, New York. He also is president of the company's Brake Shoe & Castings Division.

M. Nielsen was elected an assistant vice president of **Babcock & Wilcox Co.**, New York. He will assist **C. H. Gay**, vice president-manufacturing, in operations of all the company's plants in the boiler division.

Arthur K. Atkinson Jr. was appointed sales manager, industrial division, **Greer Hydraulics Inc.**, Brooklyn, N. Y.

John T. Ross Jr. was appointed by **Edgcomb Steel Co.**, Philadelphia, as manager of tubing sales.

Tube Turns Inc., Louisville, appointed **Lincoln D. Hall** district manager in charge of the Mid-Continent territory. He succeeds **R. S. Tyler Jr.**, resigned to join the newly established Tyler-Dawson Supply Co.

Dr. William Hirschkind was appointed technical adviser to the president of **Dow Chemical Co.**, Midland, Mich. He is replaced as western division research director by **R. G. Heitz. George J. Zahringer Jr.** joined the Midland offices to assist in development sale of solvents for industrial applications.

G. V. Migula joined **Hewitt-Robins Inc.**, New York, as manager, western sales division, with headquarters at San Francisco. He replaces **J. H. Hayden**, retired, who continues in an advisory capacity.

W. W. Kovalick was promoted from chief engineer to production manager of the Chicago plant of **Ingersoll Products Division**, Borg-Warner Corp. He succeeds **J. W. Dean**, resigned. **H. T. Burke**, formerly chief tool engineer, becomes acting chief engineer.

Thompson-Starrett Co. Inc., New York, elected **Leon P. O'Connor** executive vice president; **George J. Meyers**, vice president-budget and cost control; and **Geoffrey Breitner**, treasurer to succeed **J. J. Boeri.**

Cecil M. Peter joined **Amgears Inc.**, Detroit division, as vice president. He was with Fellows Gear Shaper Co. and resigned as vice president-general manager.

AUGUST B. HEPP
chief engineer at Logan Co.

Logan Co., Louisville, appointed **August B. Hepp** chief engineer. Associated with the company for 30 years in various engineering capacities, Mr. Hepp served as assistant chief engineer for the last seven years. He succeeds **H. R. Gotthardt**, retired, but who continues with the company as a consulting engineer.

A. M. McIntyre was appointed St. Louis district manager for **Electric Controller & Mfg. Co.**

William A. Martin was named general production superintendent at the new **Chrysler Corp.** tank plant in Newark, Del.

H. M. Sossaman was elected vice president of commercial development, **Quaker Rubber Corp.**, division of H. K. Porter Co. Inc., Philadelphia. He is succeeded as general sales manager by **J. R. Lewis.**

Jack P. Pedersen, manager of the Warner Division of **Clinton Machine Co.**, Clinton, Mich., was elected a vice president to direct the corporation's overall defense manufacturing. He will be in charge of the Warner and Clinton Divisions, now engaged entirely in defense work.

JACK P. PEDERSEN
heads defense mfg. for Clinton Machine

L. J. Clarke was appointed New York district manager for **A. Leschen & Sons Rope Co.**

W. E. Brainard was elected president and director of **Arcrods Corp.**, New York, replacing **J. H. Humberstone**, who becomes chairman of the board. **C. A. Wagner** was appointed controller.

R. L. Mitenbuler announces partnership with **K. C. Huff** in representation in Wisconsin for **Bliss & Laughlin Inc.** and **Acme Aluminum Foundry Co.** of Chicago.

John E. Cornyn was appointed resident manager, Chicago office, **D. P. Williams & Co.**, certified public accountant.

Hevi Duty Electric Co., Milwaukee, appointed **Robert H. Sommers** works manager. He is succeeded as chief engineer by **Arthur W. Frank**, formerly director of research. Mr. Frank continues to direct research, assisted by **J. C. Monday** who was placed in charge of that department.

Niagara Filter Corp., Buffalo, appointed **Arthur W. Johnston** sales manager and **Alfred L. Trumpler** as advertising manager and assistant sales manager.

J. Dudley Lockrem, vice president, was named sales manager of **Scully-Jones & Co.**, Chicago, to succeed **W. L. Voss Jr.**, who is on leave of absence.

A. P. Green Fire Brick Co., Mexico, Mo., appointed **A. R. Barnett** vice president-sales.

Keystone Steel & Wire Co., Peoria, Ill., appointed **G. Wayne Bruce** sales representative in Wisconsin and the upper peninsula of Michigan. He is replaced in the Michigan territory by **D. E. Ellinghausen. Norman F. Gebauer** returns to his former St. Louis territory following service in the U. S. Air Force. **Howard Littlejohn** will cover the south side of Chicago and counties in northern Indiana.

A. J. Tener, vice president, **Perfection Stove Co.**, Cleveland, was named director of market research. **J. C. Scott** was made assistant director.

Kewanee Boiler Corp., Kewanee, Ill., will be represented in the Des Moines,

We are leading a double life!

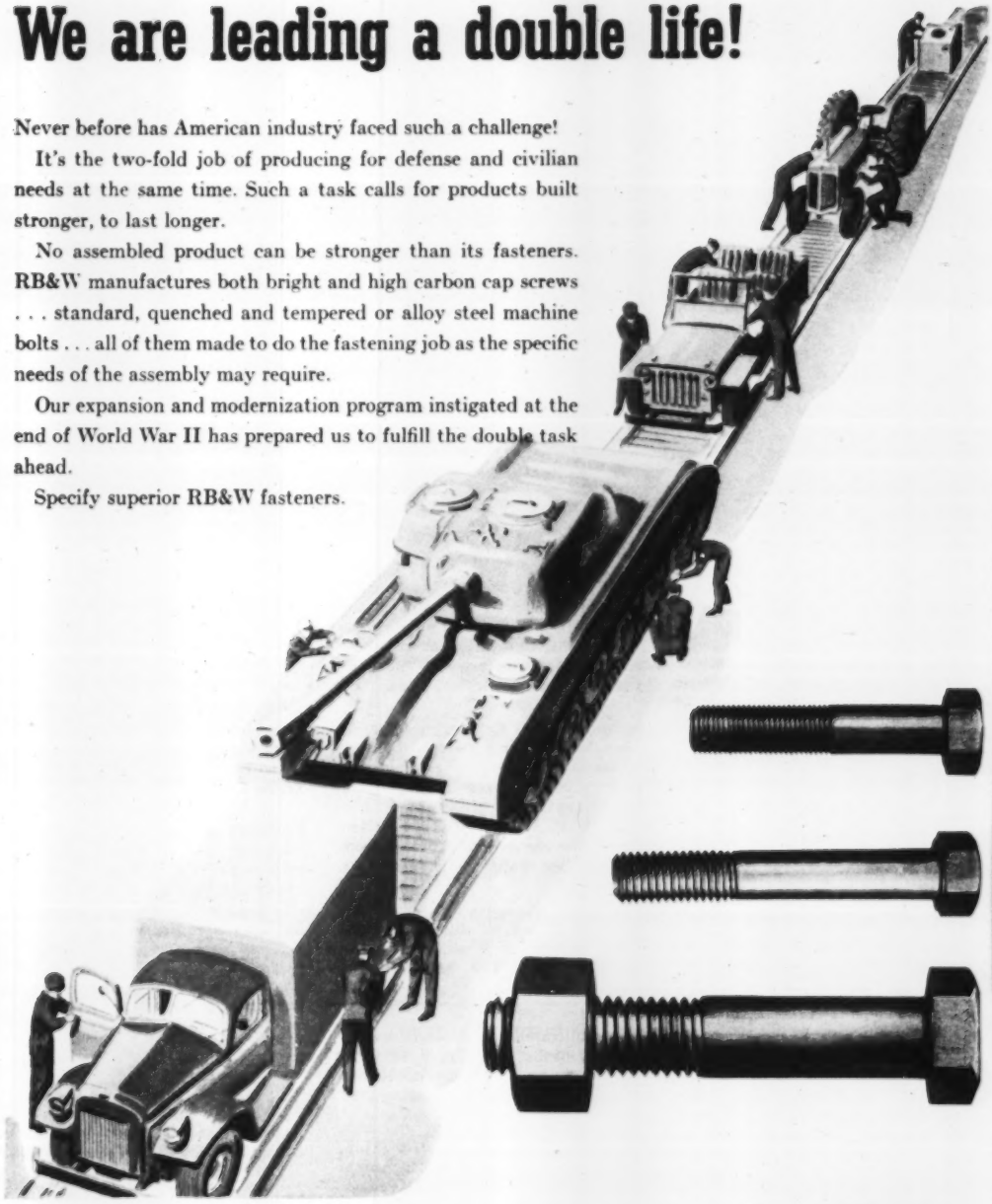
Never before has American industry faced such a challenge!

It's the two-fold job of producing for defense and civilian needs at the same time. Such a task calls for products built stronger, to last longer.

No assembled product can be stronger than its fasteners. RB&W manufactures both bright and high carbon cap screws . . . standard, quenched and tempered or alloy steel machine bolts . . . all of them made to do the fastening job as the specific needs of the assembly may require.

Our expansion and modernization program instigated at the end of World War II has prepared us to fulfill the double task ahead.

Specify superior RB&W fasteners.



RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

RB&W THE COMPLETE QUALITY LINE

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Dallas, Oakland. Sales agents at: Portland, Seattle.

106 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

F. J. KOEGLER
new president of Doehler-Jarvis

ARTHUR B. RATHBONE
assists president, Oglebay, Norton

JOHN A. HARTZELL
div. sales mgr. of Koppers Co.

Iowa, branch territory by **Walter F. Peterson,** who succeeds **George W. Bogardus,** retired.

F. J. Koegler, formerly executive vice president, was elected president of **Doehler-Jarvis Corp.,** New York. He succeeds **L. A. Jarvis,** promoted to chairman of the board. **H. H. Doehler,** former chairman, resigned that position, and accepted the new position of honorary chairman, duties of which include the chairmanship of the executive committee.

Victor E. Schlossberg was appointed assistant general superintendent in charge of operating services at the Indiana Harbor Works of **Inland Steel Co. Arthur L. Schroeder** becomes assistant chief engineer-field, and **James H. Howard** was made assistant chief engineer-design. **Clarence L. Holmberg,** assistant to the general superintendent, was transferred to the general offices of the company in Chicago as assistant general manager of sales.

William I. Campfield was appointed sales manager of building products for **Steelcraft Mfg. Co.,** Cincinnati.

Oglebay, Norton & Co., Cleveland, appointed **Arthur B. Rathbone** as special assistant to the president, responsible for sales of ore, alloys and fluorspar. In addition, he will co-ordinate purchasing activities of Oglebay, Norton & Co. and its associated companies, and will be assigned other special duties by the president.

C. H. Williams was appointed assistant executive vice president-engineering and raw materials, **United States Steel Co.,** Pittsburgh. He was chief engineer, manufacturing division and has been with U. S. Steel since 1927.

Kaufman Corp., Detroit, elected **Marshall V. Noecker** president. He continues as treasurer, a post he has held the last six years.

Roy W. P. Johnson joined the New York sales-engineering office of **Cooper-Bessemer Corp.,** Mt. Vernon, O.

Frank Gill was appointed plant manager of **Burroughs Adding Machine Co.'s** factory in Windsor, Ont., to succeed the late **J. A. McAlister.**

John A. Hartzell was promoted to sales manager, engineering and construction division, **Koppers Co. Inc.,** Pittsburgh. He succeeds **Ward L. Gable,** retired, but who remains as a special sales consultant. **C. W. Mohme** was appointed assistant to the production manager, **C. K. Waibel,** as a sales engineer, and **C. E. Mielke** and **H. A. Grosick** were named contract engineers.

Robert A. Wiesse was appointed assistant sales manager, **Kaydon Engineering Corp.,** Muskegon, Mich. He joined the company early in 1951 as a sales engineer.

Fred E. Burnham was elected vice president and controller, **Fruehauf Trailer Co.,** Detroit.

Frederick J. Benn, formerly grinding engineer in the Worcester, Mass., sales engineering department of **Norton Co.,** was appointed field engineer, Cleveland area. For the present he will work with **Sherwood F. Prescott,** abrasive engineer in eastern Kentucky.

OBITUARIES...

J. R. Berg, 63, vice president and director, **Mesta Machine Co.,** Pittsburgh, died Jan. 8. He had been with the company 49 years.

Albert D. Caddell, 64, managing director of **American Society of Safety Engineers,** Chicago, died Jan. 3.

Oscar P. Brett, 61, founder and president, **Brett Machinery Co. Inc.,** Chicago, died Jan. 8.

Wesley S. Erwin, 34, senior engineer in the physics instrumentation department, **General Motors Corp.'s** Research Laboratories, died Jan. 9. Well known for his work in application of ultrasonic to industrial inspection problems. Mr. Erwin held the basic patent on the Sonigage. He had been with the laboratories since 1940.

Raymond C. Gaugler, 59, president, **American Cyanamid Co.,** New York, died Jan. 10 at his home in Larchmont, N. Y., of a cerebral hemorrhage.

Herman Siegel, 59, scrap metal dealer, died Jan. 7 in Buffalo where he had resided for the last 37 years.

Henry Janvier, 90, former vice president-general manager, **Ferracute Machine Co.,** Bridgeton, N. J., died Jan. 6. He joined Ferracute in 1878.

Joseph A. Pryor, 71, superintendent of the machine shop of **Foster Wheeler Corp.'s** plant at Carteret, N. J., died Jan. 8.

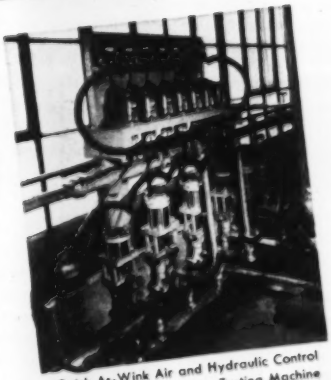
Nathaniel M. Aycock, 64, assistant manager, sales promotion department, **The Texas Co.,** New York, died Jan. 10.

Harry V. Reynolds, 55, president of **Reynolds Industries,** designer of aircraft and guided missiles, Los Angeles, died Dec. 30.

Charles C. Hill, one time general manager of the Newburgh wire works and central furnaces of **American Steel & Wire Division,** U. S. Steel Corp., Cleveland, died Jan. 11.

Special Built Machine for Exacting and Thorough Hydraulic Testing Heavy Duty Gate Valves

Quick-As-Wink Control Valves



Quick-As-Wink Air and Hydraulic Control Valves that Operate the Testing Machine Shown Above

industry wide recognition for unsurpassed dependability

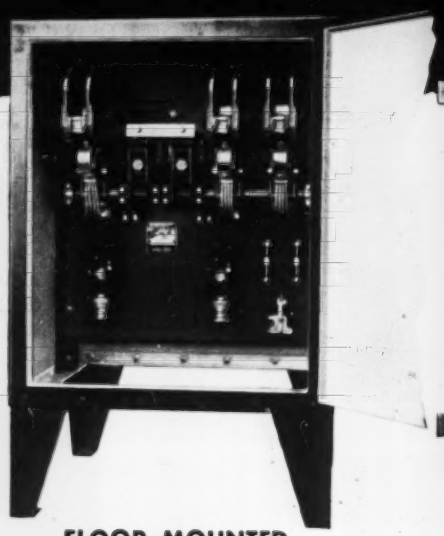
We think steel men know most about steel; rubber industry men know most about rubber; machine builders know most about machines; and valve men know most about valves. So when a large nationally known valve manufacturer chose Quick-As-Wink control valves for the exacting and thorough testing of his own heavy duty valves (see photo) we're pleased — but not surprised, because throughout the steel, rubber, machine building, and most other industries, men with experience usually prefer Quick-As-Wink Control Valves. Positive and fast-acting, every valve is designed and built for maximum air economy and the long, dependable trouble-free service you want in your operations.

Quick-As-Wink
AIR AND HYDRAULIC
Control Valves

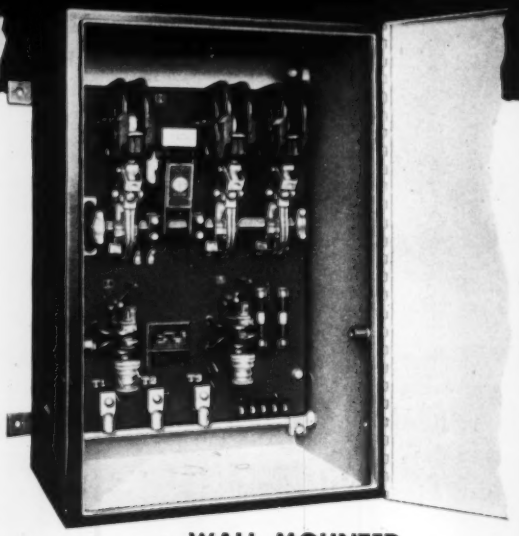
Hand, Foot, Cam, Diaphragm and Solenoid Operated

Mfd. by C. B. HUNT & SON, INC., 1911 East Pershing St., Salem, Ohio

EC&M Heavy-duty Motor Starters* *Pay Off* on essential drives



FLOOR MOUNTED



WALL MOUNTED

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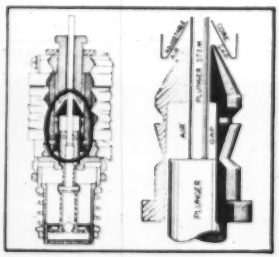

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Production AND Engineering NEWS AT A GLANCE

HYDROGEN TRAPS HYDROGEN—Hydrogen-produced defects in porcelain-enameled and ceramic-coated steel are the result of water in the frit (glass) used in the coating. Using heavy hydrogen as a tracer, researchers at the National Bureau of Standards tracked down the culprit. They found that to produce a better porcelain-enameled steel they had to use water-free frit. Hydrogen gas evolved during and after the firing operation has long been recognized as a trouble-causer. At high temperatures the gas may cause blistering during the firing, or "reboil." At ordinary temperatures, if the gas is trapped in the steel during rapid cooling after firing and later escapes, "fishscaling" may occur. Gas pressure in some cases literally blows off flakes of the coating.

COOLER CUTTING—Efficient lubrication of single-point cutting tools and improved heat transfer away from the cutting edge are two advantages of a cooling system developed by Gulf Oil. Streams of oil forced under 400 psi pressure pass through the space between work and side relief face of the tool, converging on the cutting edge. Part of the lubricant squeezing past the cutting edge is caught between chip and tool. p. 70

SNOW AND MOLTEN METAL—Molten metal solidifies in much the same way that snow forms by artifcial cloud seeding techniques. That's the conclusion of General Electric scientists based on metallurgical studies at the company's research laboratory. Solidification of molten metals occurs when metal crystals form on foreign nuclei in the melt. These nuclei are so similar in shape and atomic structure to the metal crystals that the crystals are "fooled" into collecting on the nuclei. Cast metal, such as aluminum, contains tiny crystals of titanium carbide which are similar to the aluminum crystals. The foreign nuclei, or titanium carbide crystals act in the same way as silver iodide used in cloud seeding.

JET SELF-STARTER—A new gas turbine, one of the world's smallest, is rapidly becoming an important accessory unit in jet and turbine propeller-driven planes. It gives pilots dependable self-starting. Completely enclosed in an 18-8 stainless envelope, the 150-pound unit includes automatic controls and integral cooling equipment.

WELDED ANGLE ASSEMBLY—New method of cladding steel with gilding metal is producing billets weighing 2000 to 3000 pounds in widths up to about 17 inches and raising yield of usable clad strip. Practically any combination of cladding thickness between 5 and 30 per cent, equal or unequal on one or both sides can be produced. Different metals or alloys can be cladded to either side of a steel core. p. 68

STRESS FORMULA—An equation evolved by G-E researchers makes it possible to select metals for use in long-lived equipment on the basis of creep and rupture tests that now take months to perform instead of years. The equation: P equals T (C plus log t) where P is a constant for constant stress and a particular material, T is the absolute temperature in degrees Rankine, C is a material constant that has a value of about 20 for all materials and t is the duration in hours of the stress. This work cuts delay between development and application of new alloys and greatly increases output of testing facilities.

TEMPEST IN THE CHAMBER—An explosion-proof testchamber for testing electrical and electronic devices in a mixture of air and aviation gasoline is in use at Wright Air Development Center. The ⅜-inch steel chamber will withstand pressure of 100 psi. Various conditions of altitude, explosive concentration and temperature can be obtained during tests.

SELECT BY TEST—Selection of the best airless blast cleaning method for a given application can be determined most effectively by laboratory tests. At a demonstration testing lab a customer's work is cleaned by the type of equipment he proposes to use in actual production. The laboratory is equipped wih standard and special blast cleaning units. The special cabinets are adjustable so engineers can try many combinations and positions of abrasive-throwing units and different conveyor speeds. p. 62

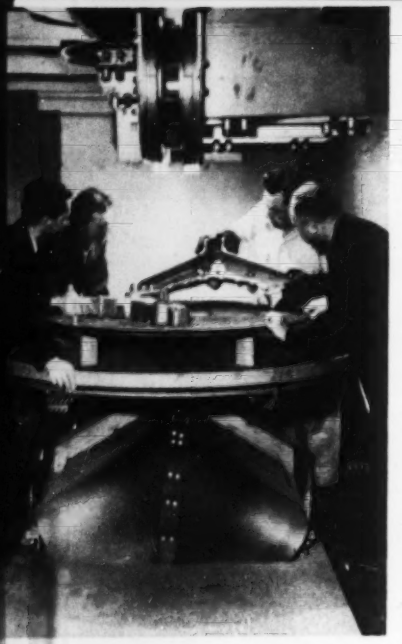
PLATINUM ANTIKNOCK—Precious metals, despite their rarity and high cost, are used as catalysts in the production of gasoline and nitric acid and also in the manufacture of glass fiber, electric light bulbs, rayon, chemicals and pharmaceuticals. Platinum's exceptional ability to withstand high temperature and severe corrosion puts this metal in the middle of these chemical industry applications.

WHAT'LL IT DO TO TEETH?—Fluorine, most active element known, combines with virtually every other material under suitable conditions and with many materials spontaneously even at room temperatures. Wood and steel, glass and even water will burn in contact with fluorine. International Nickel Co. points out that all basic raw materials in fluorine compounds are safely handled with Monel, a nickel-copper alloy, or with nickel equipment. How about Monel molars?

Metalworking Outlook—p. 25 Market Outlook—p. 101

Laboratory Tests Select Best

Higher initial equipment outlay for special cabinets is often overcome by greater output and lower unit cost on jobs where size, weight or shape are troublesome factors



Various types of work conveyors and positions of abrasive hurling wheels can be simulated in this machine

Brake drums are transported on differential belt conveyor. Abrasive hurling wheels are visible above and below

AIRLESS blast cabinets, specially designed and tailor-made, are the best solution for production cleaning of bulky work when size, shape or weight make it impossible for standard machines to do the job economically. Such pieces were cleaned in the past by arduous, time consuming methods. Sometimes several types of special equipment appear to be suitable for a difficult blast cleaning job but tests on the parts to be cleaned in a demonstration laboratory establish the one best method.

A standard model is naturally the most desirable from the standpoint of initial cost. When the designed capacity of a special cabinet can be fully utilized by pieces of large size, cumbersome shape and heavy weight, the extra initial cost is justified by lower unit cleaning costs. The extra initial cost is also justified when high production schedules must be met.

Three Choices — Airless blast equipment falls into three categories: Standard tumble-type machines, standard table-type machines and special cabinets. The tumble-type machines are used for a wide variety of compact pieces that are sufficiently rugged to withstand the gentle tumbling action which exposes all surfaces and recesses to the blast. They can accommodate pieces which weigh from a fraction of an ounce up to hundreds of pounds.

Standard table-type machines are most suitable for handling flat or fragile work not adaptable to tumbling. When a table-type machine is used, work is blasted on one side and then turned over and blasted again, so that all areas are exposed to the abrasive action. This presents no particular problem when production is such that the cleaning can be done by a standard machine in 2 or 3 hours' time per day. Expenditure of labor in turning work over between passes through the blast would not be enough to justify the cost of a special cabinet.

Handling Gets Expensive—It is another matter where production is so heavy that cleaning takes 8 or more hours a day. Under these circumstances, work handling to expose all surfaces and recesses to the blast action consumes a significant portion of a worker's daily time. If the piece to be cleaned is too fragile for tumbling or if the size, shape, or weight of it prohibits utilization of enough of the capacity of a standard tumble-type machine to be economical, a special cabinet is needed.

Where pieces are large or bulky, the need for special cabinets is even more acute, because the use of chain hoists, cranes or other lifting equipment to turn work over consumes time and overall production rates are lowered. With a special cabinet, lifting apparatus would be needed only twice—once to put a piece on the conveyor and once to take it off, since these cabinets all employ special conveying mechanisms for transporting and automatically turning the work in the blast stream.

Important Factors — Design of special cabinets for any particular application involves some degree of consideration for several items. These include the obvious three elements: Size, shape and weight of the piece to be cleaned. Also involved is the number of pockets or recesses and the condition of the work to be cleaned; that is, whether it is sandy, covered with a lot of burned-in sand or covered with a heavy scale, such as that formed by the open-cycle annealing process. Important, too, is the

Blast Cleaning Method

By EUGENE F. ANDERSON
American Wheelabrator & Equipment Corp.
Mishawaka, Ind.

susceptibility of the work to warping. The available floor area in the factory and the direction of work flow must be considered, and the required production rate is of paramount importance.

Best Choice—From a consideration of these factors, several types of equipment may look suitable, but to find out which design is best, a demonstration testing laboratory is necessary. Here a customer's work is actually cleaned by equipment of the proposed design.

Equipment in such a laboratory includes both standard equipment in a variety of sizes and special cabinets equipped with special conveyors. These laboratory special cabinets should be adjustable so that the engineers can try many combinations and positions of abrasive-throwing units and different conveyor speeds in an effort to establish the correct design for any particular requirement. Here, too, the proper abrasive can be selected to give the finish, color, and brightness desired in the particular application.

Abrasive-throwing units required and conveyor speed are influenced by the combination of size, shape, and weight of the piece, plus the condition of the work and the production rate required. The position of these units inside the cabinet is influenced by the shape of the work and the position and number of pockets and recesses.

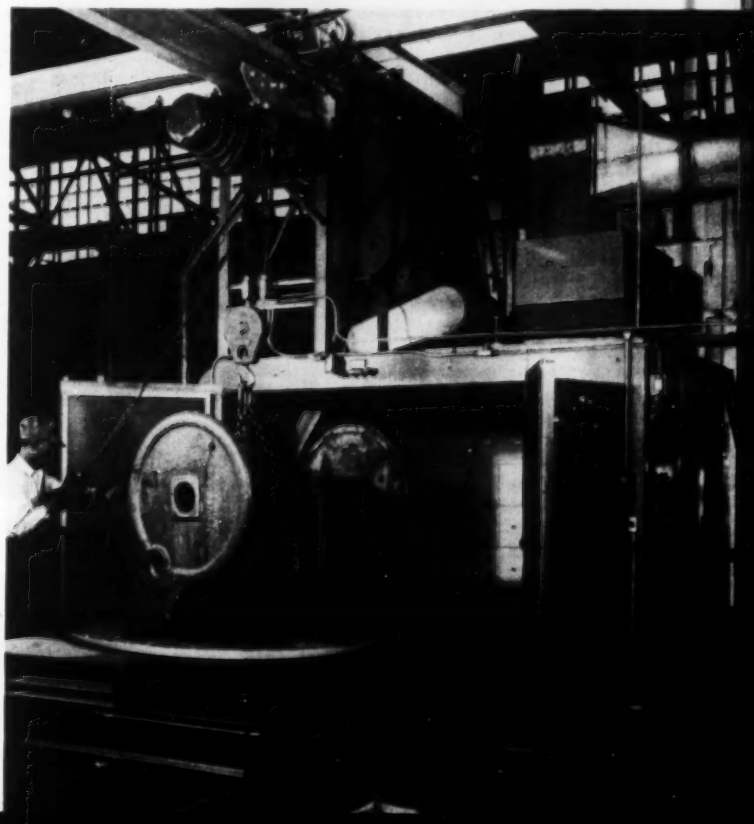
Material Governs Handling—Susceptibility of the work to bending affects to a certain extent the type of work-handling mechanism. So does the available floor area for the machine. For illustration of the latter, assume that a monorail conveyor is selected for a certain job. Available floor area would determine whether a straightline monorail or one in the shape of a U would be used. The pieces to be cleaned have to be compact enough to turn sharp corners if a U-monorail is used.

Amount of open work in the piece has a bearing on the shape of the monorail. Open work tends to make use of a U-monorail or one in the shape of an S advisable so that the abrasive thrown will not strike the walls of the cabinet and cause them to wear out. The abrasive, instead, ricochets to other work.

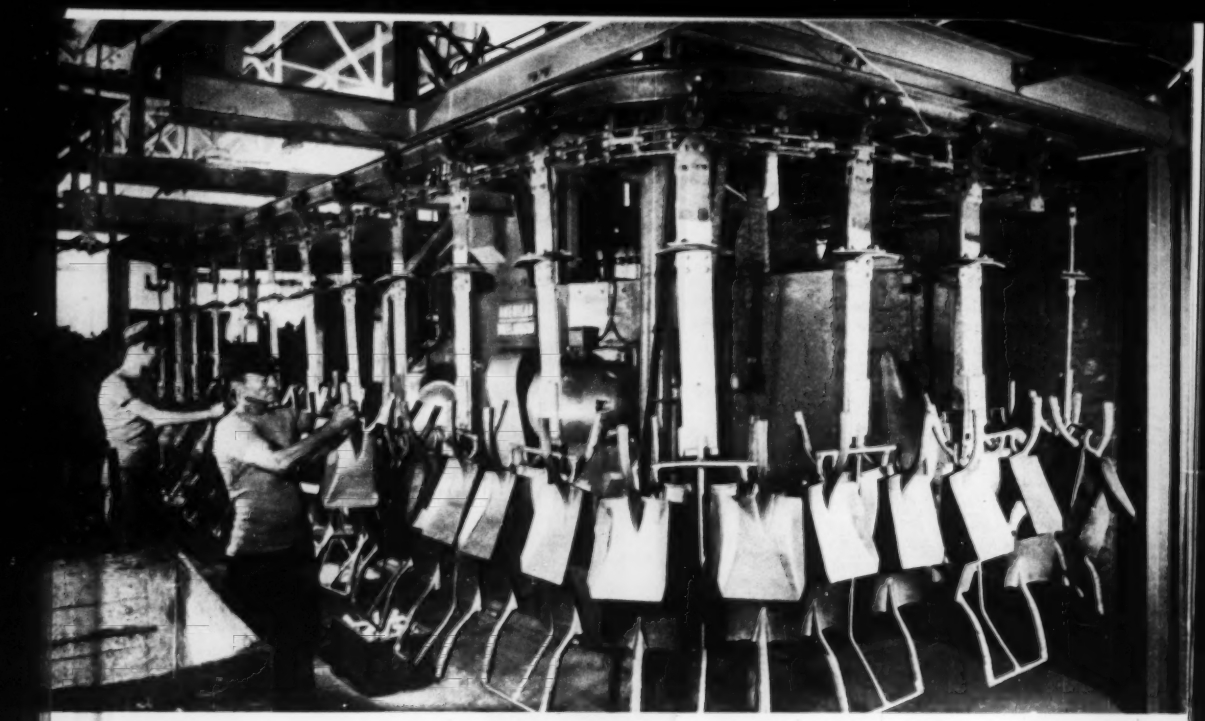
Work flow in manufacturing operations also determines the conveying mechanism. If a piece is passed from the annealing department to the cleaning department on a monorail conveyor, the same conveyor might be used to pass the work through the blasting cabinet. There are some limitations to this. The same endless conveyor could not be used to pass work from the cabinet through spray painting operations, because the conveyor would get paint spattered and the abrasive would in turn get paint coated and start sticking and caking. Size of work determines the number of rows of protective rubber curtains necessary at each end inside the cabinet to prevent flying abrasive from escaping from the cabinet while work is entering or leaving.

Abrasive is determined by the metal to be cleaned and the finish desired. A consideration of the above factors, except for conveyors, is just as necessary in the selection of standard equipment but the choice is naturally less complicated in the case of standard machines.

Typical Job—Laboratory meth-



Main drive housing for tractor loaded outside cabinet on an 86-inch diameter table is ready for entry into car-type cleaning room



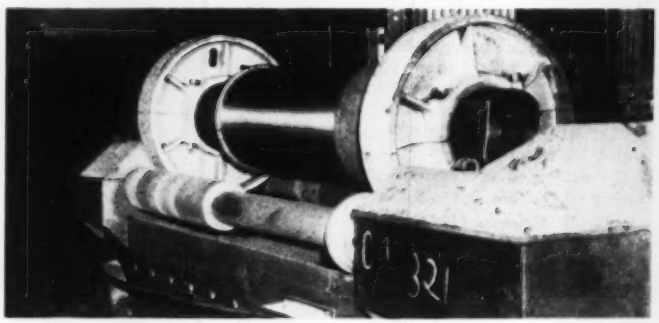
Single-pass constant travel hanger-type monorail cabinet descaled 12,000 shovel blades of assorted sizes in 8 hours. Finish is improved over former method used to do the same job

od was used in the selection of equipment for Oliver Corp., South Bend, Ind. Oliver manufactures farm and road machinery, and officials desired to clean off sand and scale from some large gray iron castings more economically than they could with their existing equipment. They were particularly concerned with two sizes of gear case castings, the large size of which was 19 x 21 x 46 inches and the small size 5 x 21 x 44½ inches.

For a determination of the proper equipment to do the job, some of these castings were taken to American Wheelabrator & Equipment Corp.'s demonstration laboratory at Mishawaka, Ind., where the necessary variety of equipment is available. After a complete study of the castings, production requirements, conveying facilities plus all the other necessary factors, Wheelabrator engineers proposed two alternate cleaning methods to be tested.

One method was based on the use of an 86-inch swing table, a plain table that rotates inside the cabinet when the abrasive units are running and comes out into the room for ease in loading and unloading when the door is opened. Several of the rough castings were cleaned with this equipment, and all foreign materials were completely removed. However, although the quality of the cleaning on these pieces was satisfactory, it was decided that the weight and size of the castings would make it difficult for the swing table to handle the individual pieces at a rate sufficient to meet production demands.

Special cabinet for roll dressing increases life of cold reduction rolls by 35 per cent. Unit is completely automatic in operation and gives a deep and uniform finish to even the hardest rolls



Best Way—The second method proposed was based on the use of continuous monorail cabinet. The demonstration department arranged for the test in a cabinet

with two blasting units. One wheel was positioned to blast upward and the second to blast downward. The castings were to rotate in the abrasive blast as they traveled along on the monorail.

A series of eight trials was conducted with minor changes in such factors as positioning of the casting, indexing time in the abrasive blast and travel speed of the conveyor being made in each test. As a result of these exhaustive tests, a special cabinet incorporating an indexing spinner-type monorail conveyor and two airless blasting units was purchased by Oliver.

Proof of Pudding — Laboratory design proved successful when the machine was put into service. In actual operation, one large casting or several smaller pieces are hung on each of the 20 hangers of the conveyor. As the castings enter the cabinet on the opposite side from the abrasive hurling units, they commence to rotate. Each casting is held for 45 seconds directly in the blast of each wheel so that thorough, uniform blast coverage is obtained. Castings arrive at the cabinet from the shakeout by means of an overhead conveyor and are transferred to the conveyor of the cabinet. A minimum of handling is required for continuous operation. Approximately 60 large castings are cleaned hourly. Besides cleaning the gear cases for which it was purchased, the machine handles some additional tractor castings.

There are many cases which show how special cabinets designed from laboratory data effect savings through solution of common problems. Automobile camshafts could be cleaned on a standard table-type machine, but not at the 1800 piece-per-hour rate maintained by a special cabinet at one Michigan foundry. This foundry has two cabinets equipped with monorail conveyors and spinner-type hangers to carry the shafts through the abrasive blast. Sand and scale is completely removed, and manual handling of the shafts in the continuous process is limited to loading and unloading the hangers.

Volume Made Possible—Centrifugally-cast brake drums could also be cleaned on a standard table-type machine but one manufacturer uses two special machines with differential belt conveyors to transport the drums through the blasting zone. This company continuously puts out double drums of the 9, 10 and 11-inch size with one machine at the rate of 1450 per hour and double drums of the 12, 14, 16 and 20-inch size with the other unit at the rate of 875 per hour.

Size is the determining factor in the airless blast cleaning of bathtubs. A monorail conveyor is used for carrying the work. Hooks on the conveyor hold the tubs, and the conveyor is built so that each hook rotates a tub as it passes through the cabinet. The blasting units are arranged so that every bit of the area on each tub is thoroughly cleaned.

Shape of tubing makes it impossible to use standard models of airless blast equipment, but the difficulty of removing heavy heat treat scale in a manner which provides a uniform surface all over the area has been eliminated by the use of a skew-dished roll conveyor which works the tubing through a special cabinet. As it passes through, the tubing turns over and over under the abrasive streams.

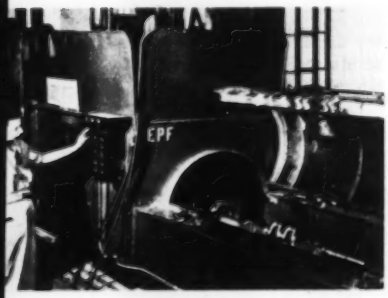
Other typical applications for which special cabinets are used and the special work conveyors employed are: Ordnance shells, skew-dished rolls; sheet steel, rubber back-up type conveyor; diesel engine castings, twin tables; and large cast or welded frames, a car which moves in and out of the cabinet on a track.

Man-hour Savings Large—Other data from the field shows some of the comparative economies that can be obtained from special airless blast cabinets. At Frank G. Hough Co., Libertyville, Ill., a car-type room is used to clean welded frames for mechanized power shovel assemblies, a 90-inch long frame is cleaned of welding spatter, flux, rust and other foreign matter, in 5 to 15 minutes per unit. The former method of chipping, grinding, and wire brushing took 2½ hours. Similar savings were obtained on an 84-inch scoop bucket. Officials at Hough say they formerly used 7 men on each of two shifts in their cleaning room, but now they need only a total of 6 men per day, which is a reduction of 64 man hours daily from the 112 formerly required.

A large western producer of compressed gas cylinders has a special cabinet for removing annealing scale and rust from the cylinders. A skew-dished roll conveyor saves $2000 a month compared with the former method of cleaning by pickling.

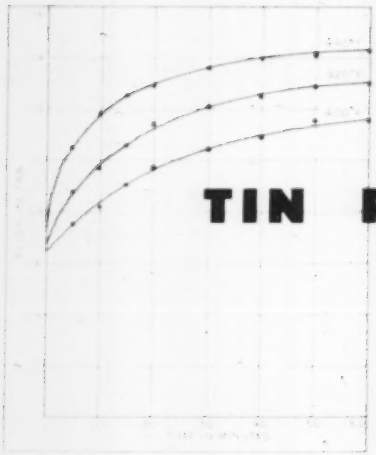
Cabinets are available for shot peening aircraft and automotive parts to give them increased fatigue life. One prominent aircraft engine manufacturer uses a special airless blast cabinet to peen aircraft engine crankshafts and gets a 3000 per cent increase in service life. Uniform blast coverage is made possible by a traveling car with a set of disks that rotates the shaft. After the peening operation, the car goes back to the loading and unloading station, so that only one man is needed to attend the machine.

Aircraft engine crankshaft service life is increased 3000 per cent since the engine manufacturer began using a blast cabinet for peening



Diesel Liner Life Increased

Lube-Lok, a bonded to metal lubrication process and licensed by Electrofilm Corp., 7116 Laurel Canyon Blvd., North Hollywood, Calif., is now being applied to diesel liners for two Class I railroads. Test of liners in service on one of the Class I roads shows that the life of the processed liners is increased approximately 85,000 miles beyond normal service, according to the company.



Tin-iron alloy increases if metal is subjected to baking operation. Chart plots the amount of increase for baking periods

Reliable method of controlling amount of tin plate deposit is now available to electroplaters. Tin alloys can be used in plating to conserve cadmium, chromium

TIN PLATING ADVANCES

NEW METHODS for determining tin plate coating weights, data on tin-zinc plating bath composition and effect of variables on tin-nickel alloys composition were reported at the 100th meeting of the Electrochemical Society. These developments are electroplating's contribution to the conservation of critical metals.

Measuring Tin Plate Coating—Method developed by C. T. Kunze and A. R. Willey, research department, American Can Co., is based on the fact that anodic dissolution of tin coatings on steel proceeds with full current efficiency in hydrochloric acid enabling the coating weight of a defined area to be calculated under Faraday's law. Unlike the anodic stripping in an alkaline electrolyte, action does not stop at the tin-iron alloy surface, but removes this constituent as well. The proper electrolyte to remove the alloy satisfactorily is result of investigating approximately 100 substances. Of all substances tested, only the halogen acids showed any promise.

Concentration of the hydrochloric acid is not critical and for simplicity in preparing test solutions is diluted 1 to 10. Solution is used at room temperature; approximately 150 samples or 1200 sq ft of No. 50 electrolytic plate surface can be analyzed before replacement.

Hot-dipped and flow-brightened tin coatings of commercial tin plate have a certain amount of tin alloyed with iron. Kunze and Willey say controlling thickness of this alloy layer influences both manufacturing operations and performance of the tin can as well as amount of metal consumed. The internal corrosion resistance of the container is a direct function of the free tin on the surface of the steel. The alloy affords little electrochemical protection.

Extent of alloying during hot tinning is in the range of 0.15-0.20 pound of tin per base box. Sufficient free tin is present in hot dipped coatings to allow for normal use, and the amount of tin converted to the alloy form is not considered a problem. In the manufacture of thin electroplated coatings, various flow brightening practices can produce alloys ranging from 0.03 to 0.18-pound of tin per base box. Proper control of the flow brightening operation can result in the maintenance of alloyed tin within the range of 0.03 to 0.06 pound of tin per base box.

Baking Increases Alloy—Subsequent baking operations on the tin plate may substantially increase the alloy thickness even though temperatures employed are below the melting point of tin. Chart shows typical alloy growth curves.

Results in One Operation—Feature of the anodic dissolution process is that both free tin and alloyed tin are ascertained in one operation by use of an electrolytic stripping circuit. A Leeds & Northrup Speedomax type G recorder, voltage range 0-5 millivolts, with a chart speed of 2 inches per minute, is employed to measure the potential changes across the cell. A silver rod is used as the reference electrode.

Prior to anodic stripping, the sample is cathodically treated in a 0.5 per cent sodium carbonate solution for 10 seconds with a current density of 0.5 amp per sq in. This procedure reduces the tin oxide on the surface and greatly improves the exactness of endpoint.

Test piece of tin plate is placed on the specimen holder by applying a 25-inch vacuum. After insertion in the cell, the circuit is closed and the recorder automatically plots the time-potential curve.

Calculation of Weights—Time required for removal of free tin is converted to coating weight designation by the following calculation:

Pounds of tin per base box = time 0.00535

Since the tin-iron alloy composition is $FeSn_2$ and these elements enter the solution stoichiometrically, only two-thirds of the current is dissipated for the dissolution of tin. The experimenters found that 0.65 was a more representative figure than the theoretical 0.67 factor.

Alloyed tin is obtained from this formula: Pounds of alloyed tin per base box = time 0.65 × 0.00535. Sum of the free and the alloyed tin gives the total amount of tin in the coating. Results of this analysis method compare with other methods of analysis with excellent agreement.

Tin-Zinc Alloy Plating—All-potassium tin-zinc alloy plating bath and its adaptation to barrel

SAVE METAL

plating was presented by F. A. Lowenheim, Metal & Thermit Corp. Process is adaptable to most types of plating equipment: Still tanks, automatics and barrels.

Metal and thermit tests in the salt spray indicate that tin-zinc alloy electroplates outperform zinc, and do not form bulky white corrosion products typical of zinc. Exposure tests show the alloy deposit to be equal or superior to cadmium in some environments. Alloy deposit is easily solderable without a flux. Its solderability is superior to zinc and comparable to cadmium. Tests indicate it may even surpass pure tin in retention of good solderability during storage. Two properties of corrosion resistance and solderability are possible at a metal cost of about half that of cadmium. Throwing power and covering power of the alloy plating process are good.

Bath recommended for tin-zinc alloy plating is basically a potassium stannate tin bath plus a small amount of zinc cyanide and larger proportions of potassium cyanide. Two formulations are suggested: One for still tanks and automatics, the other for barrels. See Table I.

Recommended temperature is 150° F. Cathode current densities are within the range of 10 to 75 amp per sq ft and anode current densities about 15 to 25 amp per sq ft. For still tanks a 6-volt dc source is usually sufficient. Tin-zinc alloy deposits are successfully achieved in many types of barrels. Recommended formula for barrel plating is shown in Table II.

Tin-Nickel Coatings—J. W. Cuthbertson and N. Parkinson, Tin Research Institute, describe conditions for plating a bright alloy coating of 65 per cent tin and 35 per cent nickel and effect of variables on the properties and composition of alloy plate. Bath recommended by the institute for tin-nickel alloy plating is given in Table III.

Bath is operated at 65° C at a cathode current density of about 25 amp per sq ft. Uniformly bright tin-nickel deposits can be obtained on irregular articles from a bath in good operating condition. Deposit is reported to be hard, with a Vickers diamond pyramid number of 600 to 700.

Corrosion tests conducted on the tin-nickel deposit by the Tin Research Institute show it to be resistant to a wide variety of corrosive agents, and in the same class as chromium plate. Alloy is electrochemically noble to steel and brass and is close to copper. On brass, a coating of 0.0005-inch is thick enough to keep porosity within tolerable limits for normal service and a coating of 0.001-inch is satisfactory for severe service. On steel an undercoating of copper is desirable to restrain pore-rusting.

TABLE I
TIN-ZINC ALLOY PLATING BATH FOR STILL TANKS AND AUTOMATICS

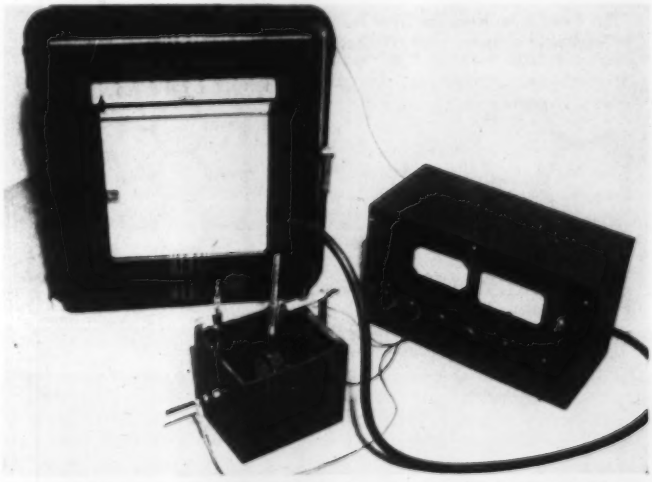
Constituent	For Make-up oz./gal	Control Limits (by analysis) oz./gal
Potassium stannate	16.0	.....
(Tin equivalent)	6.0	5.0–6.0
Zinc cyanide	1.2	.....
(Zinc equivalent)	0.67	0.5–0.8
Potassium cyanide	2.8	5.0–7.0
Free potassium hydroxide	0.87	0.65–1.1

TABLE II
TIN-ZINC ALLOY PLATING BATH FOR BARREL PLATING

Constituent	For Make-up oz./gal	Control Limits oz./gal
Potassium stannate	12.7	.....
(Tin equivalent)	4.7	4.3–5.3
Zinc cyanide	1.8	.....
(Zinc equivalent)	1.0	0.9–1.2
Potassium cyanide	2.0	5.0–6.7
Free potassium hydroxide	1.3	1.1–1.5

TABLE III
TIN-NICKEL ALLOY PLATING BATH

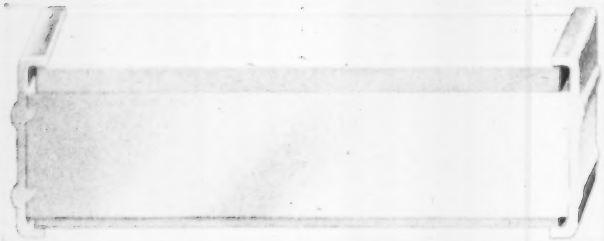
Constituent	For Make-up g./L.	Control Limits g./L.
Stannous chloride	27	.....
(Tin equivalent)		22–30
Nickel chloride	300	.....
(Nickel equivalent)		65–70
Sodium fluoride	28	.....
Ammonium bifluoride	35	.....
Total fluorine		35–40
Free hydrofluoric acid		4–12



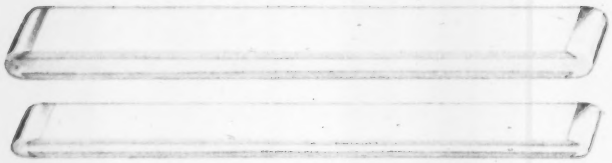
Electrolytic tin coating tester developed in American Can Co.'s research laboratory enables the accurate determination of tin and tin-iron alloy in plated coating. All this is done in one operation

Clad Steel Bullet Jackets Conserve

By E. J. REARDON
Vice President
Superior Steel Corp.
Carnegie, Pa.

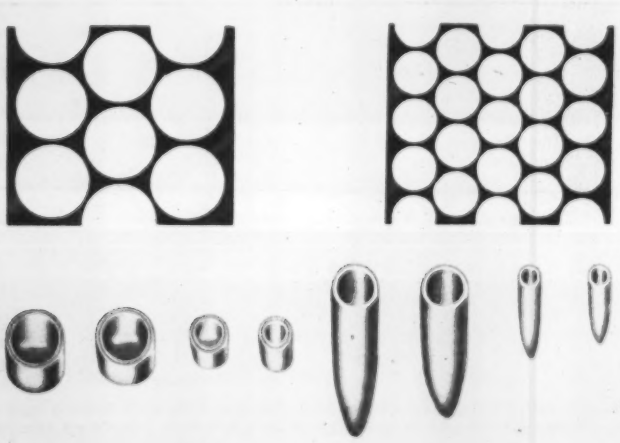


Base metal plus cladding material assembled prior to rolling. Note different thickness of copper on top and bottom



Top, section after hot rolling. Bottom, section after cold rolling

Cold-rolled section after slitting



Top views show scrap left after stamping. Bottom views show, left, material after cupping; right, finished bullet jacket produced by arsenals

PRIOR to World War II, the standard metal used in the manufacture of bullet jackets in the United States, was solid gilding metal, a 90 per cent copper-10 per cent zinc alloy. Certain other countries used solid cupro-nickel, an 80 per cent copper-20 per cent nickel alloy. England and several European countries supplied a portion of their requirements with a clad metal, made by a sandwich sheet mill process.

In 1939, Superior Steel Corp. originated a method and apparatus for producing strip steel clad with either gilding metal or cupro-nickel. The advantages of long coils of clad strip over short lengths of sheared sheet for use in high speed automatic presses were immediately apparent. Frankford Arsenal lent invaluable assistance in causing gilding metal clad steel strip to become adopted as a standard, specified material for use in certain components of small-arms ammunition and further, convinced our cupro-nickel-using allies to adopt gilding metal clad and thus release untold quantities of nickel (by this time on the critical list) for more vital uses.

Eighteen Suppliers — Eighteen steel companies were licensed, royalty free, to produce clad metal for small arms ammunition components for the duration of the war. A sufficient number of these licensed steel companies went into production on clad metal to supply the demands of the United States and all of its allies. Superior alone produced about 120,000 tons of

Copper and Zinc

New type welded angle cladding method produces 2000 to 3000-pound 17-inch wide billets and raises yield of usable clad strip. Many thicknesses are possible

gilding metal clad steel and in doing so made available for other purposes, 86,000 tons of copper and 10,000 tons of zinc.

In 1948, Superior replaced two old outmoded and inefficient hot rolling mills (maximum width 8 and 12 inches respectively) with a modern, high speed, precision 20-inch hot strip mill. With this new equipment, it became possible to perfect a new and different method of assembly of the dissimilar metal components, which had been developed and patented a few years before.

The original World War II clad metal had been made by peening nonferrous (gilding metal) plates into a modified I-beam shape of steel. These steel sections were limited in width to about 10 inches and in weight to between 600 and 1000 pounds each. Because most bullet-jacket presses were designed to use 5-inch wide strip, this method was satisfactory, albeit not as economical as might be desired because of the rather low yield of fully clad strip. The yield of the copper alloy however, was quite high; the loss in shearing being practically all steel.

Welded Angle Assembly—Installation of the hot mill and the development of a new type welded-angle assembly removed these limitations as to weight of assembled clad slab and further raised the yield of usable clad strip to a very satisfactory level. Present clad billet weights are around 2000-3000 pounds each in widths up to about 17 inches. Another feature of this improved assembly method lies in its flexibility. Practically any combination of cladding thickness between 5 and 30 per cent, equal or unequal on one or both sides, can be produced. It is possible to clad different metals or alloys, if fairly compatible, to either side of a steel core; to use practically any type of steel—or even to use various metals or alloys other than steel, as the core.

Method of cladding today involves fastening together plates of cladding metals and plates or slabs of steel. The assembly is heated and hot rolled into strip, pickled, cold rolled, normalized or annealed, repickled and slit to desired widths. The finished strip consists of specified thicknesses of cladding metal, inseparably bonded to one or both sides of the core and in condition suitable for blanking, drawing or whatever further processing is required to produce a finished part. Scrap produced both in the manufacture of strip and small arms ammunition components is further processed to separate the steel and the copper-alloy so there is no loss of steel or copper.

Facilities Expanded—An expansion program is now under way—a joint effort by Army Ordnance and Superior Steel—that by early 1952 should result in the production of an additional 4000 tons per month of clad metal. The company is furnishing land, buildings and utilities. The government is furnishing certain equipment and facilities including two new annealing and pickling lines; a new coiler for the hot mill and a new clad metal billet assembly line. In addition, from existing stand-by facilities, the government is supplying three 30-inch—4-high cold mills; one 20-inch—2-high cold mill; shears, levelers and other auxiliary equipment. Most of the above equipment will be installed in the new buildings and will be used only in the production of clad metal strip.

As to finishing equipment, the government has made available under a facilities contract two additional cup annealing and pickling lines to augment the original line and has leased a number of bullet cup presses to J. R. Richards Co., Carnegie, Pa., which converts strip to cups on a subcontract for Superior.

Alloy Steel Output Declines

Steelmakers are sharply reducing the output of alloy steel containing large amounts of nickel and molybdenum. At the same time the steelmakers are seeking to broaden the use of boron steels to conserve dwindling supplies of the more versatile alloying elements such as nickel, molybdenum and chromium.

Output of four grades of alloy steels—nickel, molybdenum, nickel-chromium and nickel-molybdenum grades—declined 22 to 64 per cent in the first ten months of last year, from the comparable part of 1950. Meanwhile, output of all alloy steel ingots totaled 7,095,518 tons, an increase of 21 per cent.

At the same time, a sharp rise was made in the output of grades of alloy steel using smaller quantities of those elements. Production of nickel-chromium-molybdenum steel was over 1,800,000 tons, an increase of 86 per cent in the ten months. Production of this type of steel was aided by the greater recovery of alloying elements from scrap.

Company Speeds Scrap Program

Wheeling Steel Corp. intensifies its campaign to increase the flow of scrap into production of new steel. Significant step in the company's program is demolition of its obsolete No. 3 buttweld tube mill at Benwood Works, W. Va. Company estimates dormant scrap in the obsolete mill totals 120 tons. Another 350 tons can be reclaimed from old railway equipment at Benwood Works.

Aid of company salesmen is being enlisted in a campaign to contact all industrial concerns and enlist their co-operation in a scrap recovery program. Recently the company played host to a group of Ohio valley farmers organized by the scrap mobilization committee in that area and county farm agents. Farmers saw at first hand how scrap from worn-out farm equipment and machinery goes into the production of open-hearth steel.

Jet Stream Lowers Cutting Tool Temperatures

HIGH SPEED jets of oil directed from below single point cutting tools and using a specially prepared cutting oil promise a sizable increase in either tool life or cutting speed. Gulf Research & Development Co., a subsidiary of Gulf Oil Corp., Pittsburgh, sired the twin developments: Hi-Jet oil and the Hi-Jet.

Streams of oil pass through the space between the work and the side relief face of the tool and are aimed at the line of contact between the work and the cutting edge. Part of the oil is forced past the cutting edge and is caught between the chip and the tool. The company claims that its development, for the first time, efficiently lubricates the tool and greatly improves heat transfer away from the cutting edge.

Entire unit consists of a jet or a series of jets, flexible tubing and a small pump capable of delivering 400 psi pressure. On many jobs the system can be installed in a matter of hours although some engineering skill is required.

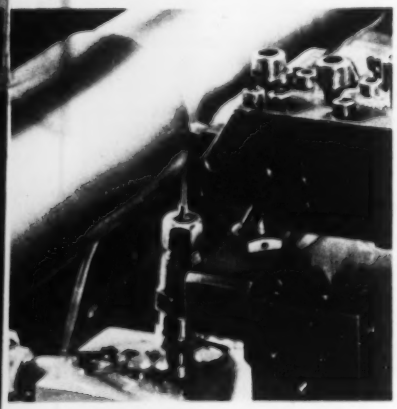
Well Tested—The system was in the experimental stage for nearly a year and over 600 tests were made on a variety of metals ranging from SAE 1020 to titanium. All tests showed an improvement in cutting tool life with the increase on high speed tools being from 6 to 12 times and on carbide tools from three to five times.

A special oil, known as Gulf Hi-Jet, was developed to use with the lubricating method. It came as a result of tests conducted on more than 50 types of oils, and entailed the development of 35 new oils plus the testing of 15 existing oils.

Since the oil gets to the exact point of contact between the cutting tool and work surface, much heat is carried away and causes more smoke than usual lubricating systems. For this reason a number of attachments were developed to serve as smoke quenchers.

Smoke Blanket—Attachments for quenching are a series of shower heads placed above and below the cutting surface. Available overhead flood equipment is used but the liquid forms a thin curtain rather than a single river, providing a more effective job. This equipment in no way influences operation of the jet since it is merely a smoke quencher and in no way a lubricant or a coolant.

Advantages for the new system over the old low speed streams as pointed out by the inventor, R. J. S. Pigott, director of engineering research for Gulf Research & Development, are: "1. Use of a jet small enough to enter the gap between the heel of tool and work has greatly improved penetration at any jet speed. There is no disturbance by cross flow from splash on the tool. 2. Cooling is greatly improved since contact with the tool is direct, flow velocities are higher and liquid is applied in a thin sheet. Greater cooling is easily proved by reduction of edge temperature. Two to three times the cooling is obtained with one-twentieth the oil circulation. 3. A considerable increase in vapor and smoke (when not using an auxiliary quenching stream) shows that liquid is boiling near the cutting edge. 4. Cutting liquid is passing the edge of the tool, probably as vapor and recondensing on top of the tool as a result of the cooler work and chip. It passes up through the channels occasioned by the difference in roughness between the cut face and the tool."



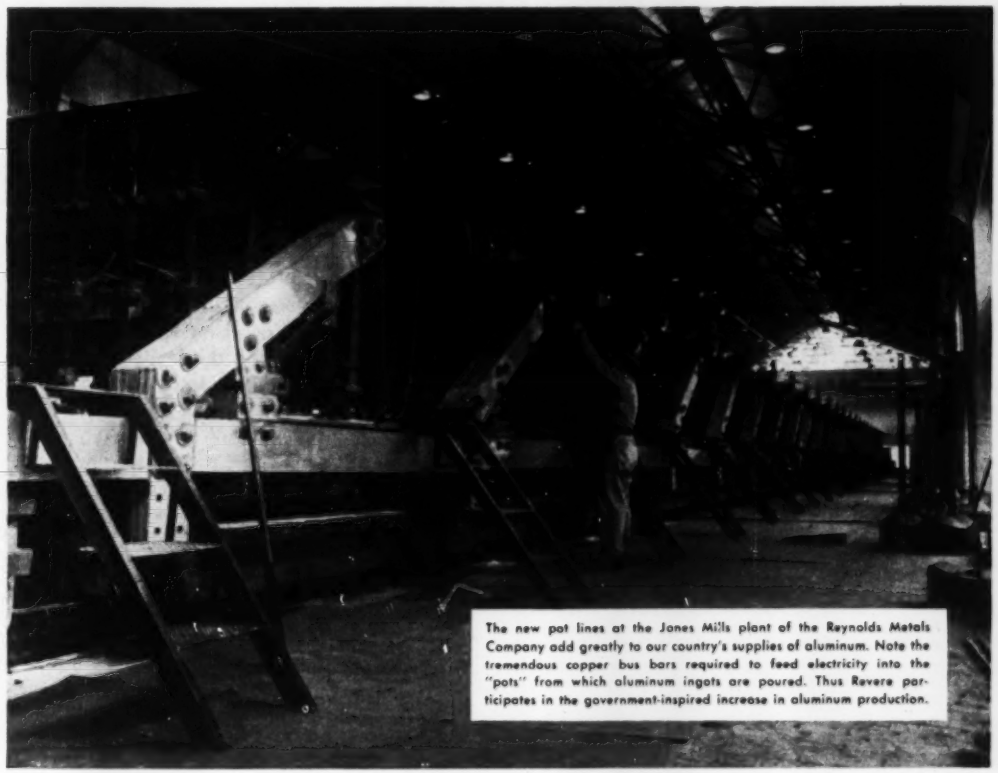
Special oil directed through the jet from below the tool passes through the space between the work and side relief face of the tool

Large amount of smoke generated is evidence that the oil is actually reaching the cutting edge. Shower heads above and below the tool provide a curtain of oil that acts as smoke quencher but in no way influences operation of jet

Bonus Benefits—Indirect advantages claimed for the process may prove equally as important as the direct benefits. Increased tool life means lower setup and tool grinding time on many jobs. Improvements possible in high speed steel tool life and cutting speeds, mean an increase in their use. Test results show a reduction in surface roughness from 200 to 60 microinches. Even where improvements in surface finish are not so pronounced, greater dimensional stability usually results.

Improved surface finish and dimensional accuracy reduces the need for additional finishing operations. In some cases the finishing operation can be entirely eliminated. There is less tendency toward work hardening of the machined parts.

Thompson Products Inc., Cleveland, will manufacture the Hi-Jet under licenses from Gulf. Current tooling schedules indicate delivery of the first production units on July 1. The unit can be applied to most operations using single point tools.



The new pot lines at the Jones Mills plant of the Reynolds Metals Company add greatly to our country's supplies of aluminum. Note the tremendous copper bus bars required to feed electricity into the "pots" from which aluminum ingots are poured. Thus Revere participates in the government-inspired increase in aluminum production.

It takes a lot of REVERE COPPER BUS BAR to increase aluminum production

● The Government has directed Revere to produce millions of pounds of copper bus bar for the new aluminum plants being put into operation in order to increase the output of this light metal that is so essential to defense. Copper is the ideal metal to carry the heavy currents required for the "pots" that produce aluminum from the ore. Thus aluminum and copper are intimately linked together. Aluminum is used in planes, ships, weapons, missiles, ammunition, and in many other defense applications. Copper, best of all the commercial metals in electrical conductivity, likewise has many vital tasks to perform for our armed forces, afloat, ashore, and in the air.

Revere is glad that its large capacity for the production of bus bar is so valuable in these times; in our long history of over 150 years of service we have always given everything possible in times of our country's need. However, we are regretful that today's government requirements materially limit our ability to fill civilian orders. We look ahead, eagerly and hopefully, to the time when the present urgent demands are met to such an extent that orders for bus bar and other Revere products can be filled more promptly.

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Accurate Methods for Computing

ELECTRIC FURNACE HEATS

Conservation of critical alloys and simple techniques for determining ferroalloy additions to bring a heat to the required chemical analysis and tapping weight are problems confronting the electric furnace melter. Ways and means of assisting the melter in making calculations are herewith presented

By R. B. SHAW
Manager, Electric Furnace Department
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Brackenridge, Pa.

Ferroalloys being weighed and checked by the first helper prior to being charged

CURRENTLY when high production rates are required and a minimum of alloying elements are available, manufacturers producing high-alloy steels such as the stainless grades, must use every means available to conserve critical materials. Such a problem confronts the personnel of the Allegheny Ludlum Steel Corp.'s melting departments. One method of conserving critical materials is to melt within a narrow chemical specification range. To do this and consistently meet the specification, mathematical techniques are required for calculating additions at the end of a heat to bring it into specification.

Chemical Range Broad During the infancy of the stainless steel industry, chemical ranges were broad because users or producers did not know what was required for a given application. As the industry matured, the original specifications were narrowed down until today there are standard types with standard analysis ranges for carbon, manganese, phosphorus, sulphur, silicon, chromium, nickel, molybdenum, columbium and titanium. These changes have brought about a change in melting techniques.

Twenty-five or thirty years ago when stainless steel began to be made in commercial quantities in the electric furnace, the melter

TABLE I

EXAMPLE FOR CALCULATING A 10-TON HEAT

An example of a difficult heat problem by Methods (A) or (B), but relatively simple by either of the latter three methods is as follows:

	Cr	Ni	Zr	Mn	Si	Al
Aim	21.30	13.30	1.0	1.40	0.550	0.70
Preliminary	21.48	11.76	...	1.24	0.028	...

Hot metal weight = 20,000 lb
Zirconium is to be added as a Ni-Zr alloy analyzing 38.58% Ni, 34.70% Zr, 10.0% Al, 9.29% Si.

	lb		%	lb
20,000 × 21.48	= 4296 Cr	+	70	= 6137 FeCr
20,000 × 11.76	= 2352 Ni	+	100	= 2352 Ni
20,000 × 1.24	= 248 Mn	+	80	= 310 FeMn
20,000 × 0.028	= 6 Si	+	75	= 7 FeSi
				8806

	%	%
21.30	÷ 70	= 30.43 FeCr
13.30	÷ 100	= 13.30 Ni
1.00	÷ 34.7	= 2.88 Ni-Zr alloy
1.40	÷ 80	= 1.75 FeMn
0.70	÷ 100	= 0.70 Al
0.55	÷ 75	= 0.73 FeSi
		49.79 − 1.75 = 48.04%
		100.00 − 48.04 = 51.96%

	%	%	%	%
2.88 × 38.58	= 1.11	÷ 100	= 1.11 Ni	
2.88 × 9.29	= 0.267	÷ 75	= 0.36 FeSi	
2.88 × 10.00	= 0.29	÷ 100	= 0.29 Al	
			1.75	

20,000 − 8806 = 11,194 ÷ 51.96% = 21,543 lb tapping weight

	%	lb		lb	
21.543 × 21.30	= 4589 Cr	− 4296	= 293 ÷ 70%	= 419 FeCr to add	
21.543 × 1.00	= 215 Zr	− 0	= 215 ÷ 34.7%	= 621 Ni-Zr alloy to add	
21.543 × 13.30	= 2865 Ni	− 2352	= 513		
		513 Ni	− 240 (Ni in Ni-Zr)	= 272 Ni to add	
21.543 × 1.40	= 302 Mn	− 248	= 54 ÷ 80%	= 67 FeMn to add	
21.543 × 0.55	= 118 Si	− 6	= 112		
		112 − 57 (Si in Ni-Zr alloy)		= 55 ÷ 75% = 74 lb FeSi to add	
21.543 × 0.70	= 151 Al	− 62 (Al in Ni-Zr)		= 89 Al to add	
				1,543 total final addition	
				20,000 hot metal weight	
				21,543 tapping weight as calculated (checks OK)	

PROGRESS REPORT ON NATIONAL CARBON BLAST FURNACE LININGS

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Table II—Procedures for Determining Electric Furnace Heats

ARITHMETICAL TECHNIQUE

Method (A): Estimation of Tapping Weight

	Cr, %	Ni, %	Mn, %
Specification	18.0-18.5	7.75-8.25	0.3-0.5
Aim	18.2	8.0	0.40
Preliminary	16.8	7.0	0.24

Hot metal weight, lb 20,000
Correct tapping weight, lb (as calculated later by Method D) 20,977

(1) Estimated tapping weight is 20,500 lb

lb	%	lb	
20,500	× 18.2	= 3731	Cr (total required)
20,000	× 16.8	= 3360	Cr (present in bath)
		371	÷ 70% purity = 530 lb FeCr to add
20,500	× 8.0	= 1640	Ni (total required)
20,000	× 7.0	= 1400	Ni (present in bath)
		240	÷ 100% purity = 240 lb Ni to add
20,500	× 0.40	= 82	Mn (total required)
20,000	× 0.24	= 48	Mn (present in bath)
		34	÷ 80% purity = 42 lb FeMn to add
			812 lb Final additions (Cr + Ni + Mn)
			20,000 lb Hot metal weight
			20,812 lb Tap weight
			20,500 lb Estimated tap weight

Note: First estimate was not high enough. Composition would be 17.92% Cr, 7.88% Ni, 0.39% Mn.

(2) Second estimate of tapping weight is 21,400 lb

lb	%	lb	
21,400	× 18.2	= 3895	Cr (total required)
		3360	Cr (present in bath)
		535	÷ 70% purity = 764 lb FeCr to add
21,400	× 8.0	= 1712	Ni (total required)
		1400	Ni (present in bath)
		312	÷ 100% purity = 312 lb Ni to add
21,400	× 0.40	= 86	Mn (total required)
		48	Mn (present in bath)
		38	÷ 80% purity = 47 lb FeMn to be added
			1,123 lb Final additions
			20,000 lb
			21,123 lb Tap weight
			21,400 lb Estimated weight

Note: Second estimate of tapping weight was a little too high. Composition would be 18.44% Cr, 8.10% Ni, 0.41% Mn.

Method (B): Approach to tapping weight by increments

	Cr, %	Ni, %	Mn, %
Aim	18.2	8.0	0.40
Preliminary	16.8	7.0	0.24
	1.4	1.0	0.16

lb	%	lb		lb
20,000	× 1.4	= 280	÷ 70 purity =	400 FeCr
20,000	× 1.0	= 200	÷ 100 purity =	200 Ni
20,000	× 0.16	= 32	÷ 80 purity =	40 FeMn
				640 (first final addition increment)
640	× 18.2	= 116	÷ 70 purity =	166 FeCr
640	× 8.0	= 51	÷ 100 purity =	51 Ni
640	× 0.40	= 2.5	÷ 80 purity =	3 FeMn
				220 (second final addition increment)

Repeating the foregoing procedure gives additional increments of total alloy elements of 75, 25, 8 and 2 lb respectively. The addition of all the increments and the hot metal weight gives a tap weight of 20,970 lb. The correct weight is 20,977 lb shown later by Method D.

Method (C): Dilution method of calculating tapping weight

	Cr, %	Ni, %	Mn, %
Aim	18.2	8.0	0.40
Preliminary	16.8	9.0	0.24
	(Nickel melted in high 9.0%)		

lb	%	lb	
20,000	× 9.0	= 1800	Ni in bath ÷ 8% = 22,500 lb tapping weight
22,500	× 18.2	= 4095	Cr (total required)
20,000	× 16.8	= 3360	Cr (present in bath)
		735	÷ 70% = 1050 lb FeCr to add
22,500	× 0.40	= 90	Mn (total required)
20,000	× 0.24	= 48	Mn (present in bath)
		42	÷ 80% = 52 lb FeMn to add
			1,102 Ferroalloys
			20,000 Hot metal
			21,102

22,500 − 21,102 = 1398 lb common scrap to add for diluting the Ni

Note: Method (C) is applicable only if preliminary of some element is made to come over the "aim."

ALGEBRAIC TECHNIQUE

Method (D): Same conditions as for Methods (A) and (B)

	Cr, %	Ni, %	Mn, %
Aim	18.2	8.0	0.40
Preliminary	16.8	7.0	0.24
	1.4	1.0	0.16

1.4 ÷ 70% = 2.00% by weight FeCr (70%)
1.0 ÷ 100% = 1.00% by weight Ni
0.16 ÷ 80% = 0.20% by weight FeMn (80%)

3.20% × 20,000 lb = 640

18.2 ÷ 70% = 26.00% FeCr by weight
8.0 ÷ 100% = 8.00% Ni by weight
0.40 ÷ 80% = 0.50% FeMn by weight

34.50% Ferroalloys by weight

Tapping weight − Ferroalloys = Total unalloyed iron
100.0% − 34.50% = 65.50% Iron by weight in tap
640 lb ÷ 65.50% = 977 lb total final additions
= 20,000 lb hot metal

20,977 lb tapping weight

lb	%	lb	
20,977	× 18.2	= 3818	Cr (total required)
		3360	Cr (present in bath)
		458	÷ 70% = 654 lb FeCr to add
20,977	× 8.0	= 1678	Ni (total required)
		1400	Ni (present in bath)
		278	÷ 100% = 278 lb Ni to add
20,977	× 0.40	= 84	Mn (total required)
		48	Mn (present in bath)
		36	÷ 80% = 45 lb FeMn to add
			977 lb Ferroalloys to add
			20,000 lb Hot metal weight
			20,977 lb Tapping weight as calculated

Method (E): Same conditions as method (D)—20,000 lb hot metal weight

	lb	%	lb	
From (D)	Weight of Cr in hot metal	3360 Cr	÷ 70 =	4800 FeCr
	Weight of Ni in hot metal	1400 Ni	÷ 100 =	1400 Ni
	Weight of Mn in hot metal	48 Mn	÷ 80 =	60 FeMn
				6260 Ferroalloys in hot metal

Hot metal	Ferroalloys	Iron	
20,000	6260	= 13,740 = 65.5%*	= 20,977 lb tapping weight

* Refer to Method (D)

Method (F): Same conditions as Method (D)—20,000 lb hot metal weight:

Ferroalloys in hot metal		Ferroalloys in tap weight	
%	%	%	%
16.8 ÷ 70 =	24.0 FeCr	18.2 ÷ 70 =	26.0 FeCr
7.0 ÷ 100 =	7.0 Ni	8.0 ÷ 100 =	8.0 Ni
0.24 ÷ 80 =	0.3 FeMn	0.4 ÷ 80 =	0.5 FeMn
	31.3		34.5
100.0 − 31.3 =	68.7%	100.0 − 34.5 =	65.5%

Then, 68.7 ÷ 65.5 × 20,000 = 20,977 lb tapping weight

When calculating the ferroalloys to be added to a heat, the melter naturally uses arithmetic, but Methods (D, E and F) originally were derived from algebra and then converted to arithmetic for simplicity. The basic algebraic calculations, derived by setting up two equations and solving simultaneously, are as follows:

1. Hot metal weight + Pounds ferroalloys used for final additions = Tapping weight
2. Pounds ferroalloys in tapping weight − Pounds ferroalloys in hot metal weight = Pounds ferroalloys used for final additions

Method (D)

Let y = tapping weight and x = final additions

16.8 ÷ 70% purity =	24.0%	18.2 ÷ 70% purity =	26.0%
7.0 ÷ 100% purity =	7.0%	8.0 ÷ 100% purity =	8.0%
0.24 ÷ 80% purity =	0.3%	0.4 ÷ 80% purity =	0.5%
	31.3%		34.5%

(1) $0.345y - 0.313\ (20{,}000\ \text{lb}) = x$
(2) $20{,}000 + x = y$
(3) $0.345\ (20{,}000 + x) - 0.313\ (20{,}000) = x$
(4) $20{,}000\ (0.345 - 0.313) = 0.655x$
(5) $0.655x = 640$
(6) $x = 997$ lb total final additions
(7) $20{,}000 + 977 = 20{,}977$ lb tapping weight

Method (E)

Solving equations (1) and (2) for y

$0.345y - 0.313\ (20{,}000) = y - 20{,}000$
$0.655y = 20{,}000 - 0.313\ (20{,}000)$
$y = 20{,}977$ lb tapping weight

Method (F)

Let y = tapping weight and z = hot metal weight
Then $0.345y - 0.313z = y - z$
$0.655y = 0.687z$
$y = 0.687 \div 0.655\ (z)$ = tapping weight

Note: z is known to be 20,000 lb (hot metal weight)

could approximate the amount of ferroalloys required to bring a heat of steel to a given analysis. In many cases the chromium and nickel range was so broad that a preliminary test was not run.

Today, because of the narrow alloy range it is necessary to send a preliminary test to the laboratory for analysis in order to allow the melter to know what quantities of ferroalloys he must add to finish the heat within specification. The melter knows the pounds of steel he has in the furnace (hereafter known as hot metal), and from the analysis reported by the laboratory the melter estimates or calculates the amount of ferroalloys to be added to the hot metal weight to get a tapping weight.

How Additions Are Computed—Natural approach to the problem of computing final additions from the preliminary tests, used by some shops today is:

1. To make several estimates of the tapping weight until the correct one could be assured by different calculations.

2. To calculate the amount of ferroalloys required, subtract the preliminary from the aim analysis; the resultant percentage then is multiplied by the hot metal weight and divided by the alloy purity for each element.

3. To charge sufficient alloying elements into the furnace so that the preliminary test on one element melts in above the specification; this requires the melt to be diluted with iron and ferroalloys. The tapping weight is calculated by the dilution required and the other elements adjusted from this weight.

Method B, Table II, gives, for an 18-8, about 65 per cent of the desired amount of ferroalloys required. The additional 35 per cent ferroalloys is estimated or the true tapping weight approached by incremental calculations. The larger the alloying addition required, the more incremental calculations become necessary. The third method of calculating, method C, is the easiest although not always feasible for every melt shop.

Three algebraic techniques may be used to give the exact number of pounds of each ferroalloy required, regardless of the number of elements that must be adjusted. However, for brevity, only the elements chromium, nickel and manganese will be considered. Methods A and B approximate the true tapping weight, whereas method C will give true tapping weight as well as three additional methods which will be discussed later.

Various Methods Employed—To illustrate the different methods of making alloy additions to these types of steels, assume a heat is to be made which has a specified range of 18.0 to 18.5 per cent chromium, 7.75 to 8.25 per cent nickel, and 0.30 to 0.50 per cent manganese. The aim composition for these ranges is 18.2, 8.0 and 0.40 per cent respectively. If the preliminary test shows 16.8 per cent chromium, 7.0 per cent nickel and 0.24 per cent manganese the calculations shown in method A become necessary to get the true tapping weight and to get the composition required.

As can be seen from the two estimates of tapping weight, method A, the true tapping weight lies intermediate between these estimates, and the melter must use his discretion on what tapping weight to choose to make the analysis.

Any of the latter three methods in Table II are applicable to the carbon and low-alloy grades of steel as well as the stainless, but in the case of the former, it is easier to use method B. The amount of final additions necessary represents only a small percentage of the tap weight so that a small error is introduced if the calculation is only carried out to the first increment.

Felt Pads Reduce Installation, Maintenance Man-hours

HIGHLY satisfactory mounting method for machinery widely used throughout the company today resulted from the necessity of saving man-hours when Telechron Department, General Electric Co. occupied its Main street plant in Worcester, Mass. The formerly used installation method requiring lag bolts and expansion shields required many man-hours, William Long, maintenance superintendent, explains so it was decided to use the Unisorb pad method on a small battery of 20 Browne & Sharpe automatics. Installation man-hours were cut 80 per cent from former requirements, providing the impetus for additional uses.

Pads used in the system are made by Unisorb Division, Felters Co., Boston. They not only reduce installation time but cut down vibration and shock in equipment resulting in large savings in maintenance man-hours.

Large engine lathes and other equipment in the tool room and maintenance department are levelled with metal shims well coated with plastic cement, eliminating the leveling bolts that in the past gave considerable trouble by wearing holes in the cement floors, throwing the machines off balance. Large Bliss presses are mounted on ½-inch pads but large lag bolts and expansion shields are used to prevent creeping. Using 1-inch pads was tried on these presses but a rocking motion was gradually set up due to the heavy cushion under the base and this would loosen the lag screws and shields.

Assembly conveyors make excellent use of pads. The conveyors are 75 feet long and in the past were assembled in position, the location of lag holes was marked in the floor, the entire conveyor was shifted so holes could be drilled, the conveyor was pushed back into position and bolted down. With the Unisorb method, the conveyor is lined up, raised high enough to insert ¼-inch pads well coated with plastic cement under each leg and finally the conveyor is lowered into place.

Vibration is kept at a minimum in the buffing department by the pads, despite high speed operations of the buffing jacks. About two-thirds of the base of each Reed & Prentice plastic molding machine at the Foster street plant is mounted on pads. Seepage of hydraulic oil on the pads has no effect on the pads or the cement. In an 18 month period there has been no instance where a machine has jarred loose or where exposure to lubricant or coolants proved harmful to the pads or plastic cement.

New Metal Cutting Concept Lengthens Tool Life

BASIC new concept of the physics of metal cutting is being applied to many difficult machining operations with great improvements in cutting tool life. In some instances of thread chasing and tapping, increases of 900 per cent have been recorded. Speeds and feeds have been increased 25 to 35 per cent.

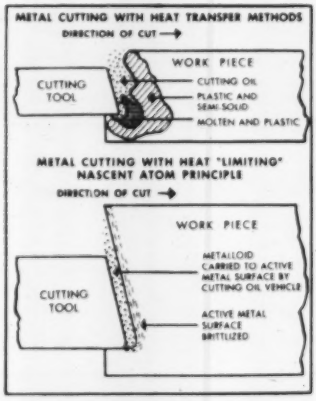
The process developed by K. R. Blake, vice president and technical director, Metalloid Corp., Huntington, Ind., uses a chemical compound known as Metalloid X-20, which acts to limit the movement of the atoms in the crystal lattice of the metal when it is being cut. This action may be likened to the physical changes occurring in steel when it is hardened by nitriding or carburizing.

One of the most significant differences is in depth of penetration of the active elements. Effects of the compound are limited to approximately one molecular layer each side of the separated area, due to the extremely short time available for penetration.

No Heat Transfer — The new product, Mr. Blake says, has none of the heat-transfer properties of conventional cutting oils, but will use any cutting oil as the vehicle to carry the nascent atoms to the active metal surfaces to limit heat generated.

In one interesting example on a deep hole boring job using high speed tools the feed was increased from 0.004 to 0.010-inch. Surface feed was increased from 144 sfm, to 288 sfm, with tool life increased five times.

The cutting material functions by reducing and limiting quantity of heat generated by the plastic flow of the metal during the cutting operation. Consequently, both tool and work remain much cooler than when machining under ordinary conditions. Reduction of plastic flow in the work also results in greatly improved surface finish quality, the manufacturer states.



Limits Plastic Deformation — Theory behind the successful development of Metalloid X-20 is that the Btus generated per cubic inch of metal removed are directly proportional to the degree of plastic deformation and the number of cubic inches of metal per minute being removed. In actual operation, zone of control is at the point of active metal at the cut. Here the nascent atoms in the compound are released to penetrate the active metal creating a brittle effect in the metal for the succeeding cut. Added brittleness thus obtained in the work reduces plastic deformation during the cut and reduces heat generation to only a fraction of that formed by conventional methods.

Use of X-20 is said to be giving spectacular results when used with titanium steels, boron steels, stainless and other high alloy materials.

Radiation Detector Simplified

National Bureau of Standards electronic instrumentation laboratory announces development of a gamma survey instrument that requires no microammeter. Instrument, which was developed for the the Navy Bureau of Ships, permits reading radiation levels directly from a potentiometer dial. To read an unknown value of radiation, operator turns dial to the point at which an audio oscillation just begins. This point is determined with the small earphone.

Aural indication is convenient for plotting contours of equal radioactivity. With dial set for a radiation level, the operator walks along and locates aurally a series of equally radioactive points. Heart of the aural indication method is a thyratron relaxation oscillator circuit. If the potential difference between the grid and cathode of the thyratron exceeds the firing potential, the circuit oscillates. Unknown voltage derived from the detector tube current is applied to the outer potentiometer terminals. Potentiometers setting at the threshhold of oscillation thus depends on the radiation level.

Welding Cuts Production Costs

Switching from mechanical assembly to welding, Eagle Signal Corp., Moline, Ill., completely weatherproofs its aluminum traffic signal controller cabinets and cuts production costs 20 per cent. Signal boxes are exposed to severe weather conditions and the problem of protecting controls has been a major one to company engineers.

Boxes previously were held together with long tie-rod bolts, weather sealed by sponge rubber strips glued along the edges of the joints. Principal difficulty was cabinets could be jarred out of alignment, allowing rain and dust to seep through cracks. With minor mechanical changes, cabinets are now manually welded using a General Electric type WP inert arc welder.

Packaging Problems Discussed

Two publications available from the American Management Association are intended to offer aid to industry in solving packaging problems. Packaging series No. 36 entitled, "How Industry is Solving Its Packaging Problems" is a 40-page compilation of papers delivered by industry experts at the association's 1952 packaging conference. No. 37 in the series, "Military Packaging Requirements" is a 60-page booklet consisting of conference papers dealing with military aspects of packaging.

Booklets may be obtained for $1.25 each from AMA, 330 W. 42nd St., New York 18.

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GULF SERVES INDUSTRY

Catalytic Engine Developed

Synthetically compounded catalyst cast in the cylinder head or piston does the trick

COMPLETION of preliminary tests of a new process resulting in better fuel and engine performance of internal combustion engines is announced by Robert S. Wallach, president, Associated Development & Research Corp., New York. Process is the invention of Dr. Sophia Berkman.

In the process a synthetically compounded catalyst is cast in the cylinder head or piston. This tends to prevent carbon formation and the destructive impact of knock or ping. The new catalyst among its other functions assists in a more complete combustion within the cylinder and thereby reduces the need for higher octane gasolines.

Extra Power — Tests of the Berkman catalytic piston in standard Co-operative Fuel Research engines demonstrate improved performance of gasolines equivalent of up to 25 octane numbers. Gasoline used today, which averages 76 octane, and may go lower due to war restrictions, has performed as if rated as high as 100 octane in tests of the new process. As the result of the invention, engines of 10:1 compression ratio, with their economy of operation, may ultimately become a practical reality, Mr. Wallach says.

Natural ores and minerals selectively chosen for their catalytic activity are compounded and regrouped into a synthetic ore and are cast within the cylinder chamber. This catalyst, with its surface exposed to the gasoline mixture, alters the type of combustion without undergoing changes in itself. The minerals of this catalyst are selected for their specific catalytic functions; some promote completeness of combustion while others retard the combustion rate and thus prevent knock. Still others are included to take care of particular reactions in gasolines of different specifications.

The new catalyst, having a multiplicity of actions, appears to be self-regenerating and therefore can be expected to have a long life even under the drastic conditions within the engine cylinder, Mr. Wallach says. He also advances the belief that the catalytic engine would facilitate the use of existing knowledge regarding the performance potential of internal combustion engines. Because each type of engine varies in construction, individual engine manufacturers will have to undertake further research to adapt the process.

Economy Too — Since natural ores and minerals are used, the actual cost of the raw materials used in the new catalyst should be less than a dollar for each multicylinder engine. The ultimate cost would be determined by individual engine manufacturers, with the likelihood that it would represent only a small fraction of the total cost of an engine.

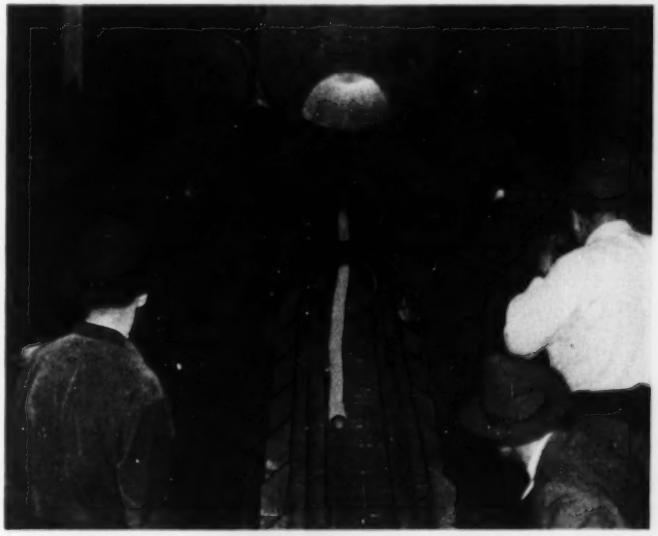
Military applications in terms of both use and conservation of fuel may result. Frequent rebuilding of aircraft engines, necessitated by the use of leaded gasoline, is a costly factor in military as well as commercial air transport operations. Substantial carbon deposits are found in the average engine today after it has been run less than an hour. Tests using the Berkman process have failed to produce any measurable carbon deposits after engines have been run for as long as 40 hours or more.

Stainless Tubing Hot Extruded by French Process

SEAMLESS stainless steel tubing was produced on the new hot extrusion facilities of the Tubular Products Division, Babcock & Wilcox Co. for the first time in December. The Beaver Falls, Pa. plant is the first in the United States designed specifically to produce stainless steel tubing by the Ugine-Sejournet extrusion process.

Luke E. Sawyer, B-W vice president, points out that the process makes it possible for the first time to extrude hollow and solid sections of metals which forge with great difficulty. It also permits much finer and more complicated sections than heretofore possible even with the more readily forgeable steel alloys. Distinguishing feature of this extrusion method is the use of glass to act for an extremely short time both as a lubricant for the hot worked metal and as an insulator to protect the die system.

First lot of extruded seamless tubing produced was B&W Croloy 18-8S, and 18 per cent chromium 8 per cent nickel stainless alloy. The extruded tubes were Roto-Rocked.



BABCOCK & WILCOX FACILITIES BEGIN OPERATIONS

. . . glass is lubricant, protector for die system

Nitrogen Injection Desulphurizes Quickly

Problem of desulphurization at Quebec Iron & Titanium Corp., finds successful solution through a technique that is finding increasing application—nitrogen injection. Canadian Liquid Air Co. helped develop the process in use at the iron company's Sorel, Que., plant.

Quebec Iron, a new basic industry for Canada, produces iron and titanium dioxide slag used in manufacture of paint pigment. Ilmenite ore containing 40 per cent iron is smelted in an electric furnace which is periodically tapped for titanium dioxide slag, and for iron containing 1.10 per cent carbon, 0.6 per cent sulphur.

Iron is transferred to 60-ton basic electric furnaces for elimination of sulphur and reduction of carbon. Abnormally high sulphur content of the iron makes standard slag forming procedure excessively long. Company solves problem by injecting granular slag-forming materials under pressure directly into the molten metal.

Nitrogen is used as a carrier. Injections are made by an expendable steel lance and are continued until sulphur content reaches the required level. Nitrogen lancing process of sulphur removal is said to be rapid and economical. Slag is easily controlled. Desulphurization efficiency is high. Savings in furnace operating time more than offset the cost of nitrogen.

Process Colors Aluminum

A one-operation chemical process called Alumox 44, that permits the protection and coloring of aluminum in such colors as yellow, blue, green, etc. is announced by Enthone Inc., New Haven, Conn. Coloring procedure consists of cleaning the aluminum part and then immersing it in a solution of Alumox 44 salts. Dyes are added to the processing solution so that coating and dyeing occurs simultaneously. Company claims with the new process, aluminum objects can be dyed shades of brass and gold to resemble solid metals.

Clear coatings can be produced on aluminum to reduce finger marking and protect the aluminum against weathering. Coatings are relatively nonconductive and have a thickness of approximately 0.0001-inch. Process is not meant to be a substitute for electroanodizing and was designed as a means of rapidly producing beautiful adherent colors on aluminum. In most cases, the finish is covered with clear lacquer. Almost all aluminum alloys can be processed successfully including the wrought and cast alloys.

Injection of an expendable steel lance into molten iron in electric furnace at Quebec Iron & Titanium Corp. to spray mixture of nitrogen and slag forming materials produces rapid, economical desulphurization of high sulphur iron

Answers Questions on Pickups

Pickups and how to choose them —answers to questions regarding amplitude and accelerations, frequencies, nature of motion and range of temperature are contained in a technical bulletin, CEC 1503 issued by Consolidated Engineering Corp. Pickups described are used as primary sensing units in vibration and acceleration studies.

Attached to the machines or structures under test they convert motion to a varying proportional voltage for reading on vibration meters or viewing on an oscillograph screen. Booklet may be obtained by writing the company at 300 N. Sierra Madre Villa, Pasadena 8, Calif.

Tube Fitting Catalog Published

Parker Appliance Co., Cleveland, offers a 76-page catalog on tube fittings and tube-to-pipe adapters, fabricating equipment, and pertinent data on engineering selection and installation. Photos, drawings, and dimensional tables are included for Triple-lok standard 3-piece fittings in brass, aluminum, steel, and stainless; the Ferulok flareless fitting in steel; precision machined pipe fittings, and tubing, tube clips, tube cutters, benders, and flaring tools.

Data section includes six pages

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of how-to-do-it photos and eight pages of selection charts relating tube size to such variables as velocity and flow, differing service conditions, allowable stress, temperatures, and pressures.

Nickel Alloy Books Offered

International Nickel Co. Inc. is offering two booklets on nickel alloys. The first, entitled "Nickel Alloy Steel Casting In Industry," has 32 pages, over 100 illustrations and reports on steel cast to shape as an engineering material. Booklet gives data on properties and applications of cast nickel steels of the constructional grades, classified by industrial fields. Low temperature properties, abrasion resistance, depth hardening and welding are discussed. Advantages and recommeded specifications and compositions for typical service applications are given.

Second booklet, 32 pages, discusses austenitic iron-nickel alloys having special thermal expansion or thermoelastic characteristics. The profound but controllable effects of nickel in modifying certain fundamental properties of iron such as thermal expansion, thermal conductivity, magnetic permeability, modulus of elasticity and variation of elastic modulus with temperature are discussed. Trade names, typical compositions, sources and distinctive properties are summarized.

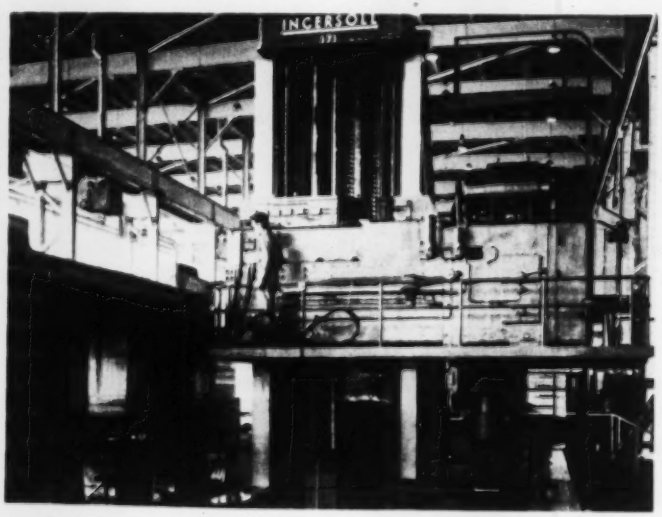
Both booklets may be obtained by writing the company, Dept. EZ, New York 5.

Air Tool Catalog Published

Aro Equipment Corp., Bryan, O., has published a catalog covering the entire line of air tools and accessories produced by the company. Catalog is 76 pages, shows all standard tools, plus new ones. Accessory listings have been expanded and revised; two new pages explain the conversion of a screwdriver to a nutsetter. Where necessary, working dimensions have been illustrated on right-angle tools.

Typical page in the catalog begins with an illustration of tools. Then follows a number listing of important features. Finally there is a specification section giving all technical data for the tools illustrated and others in that series.

Giant Horizontal Miller Installed



CUTTING its teeth on a 100,000-pound weldment, eventually to be the bed of a Bliss stamping press, is this Ingersoll horizontal milling and boring machine. Heaviest, most powerful machine ever built by Ingersoll, mill is installed at E. W. Bliss Co., Canton, O. Designed for work on steel rolling mill housings and press frame sections, machine weighs nearly 400,000 pounds, has a ram 24 inches square which extends into pockets 74 inches deep

CALENDAR
OF MEETINGS

† *Denotes first listing in this column.*

January 21-24, American Roadbuilders Association: 50th anniversary meeting, Hotel Rice, Houston. Association address: 1319 F St. NW, Washington 4. Secretary & executive vice president: Lt. Gen. Eugene Reybold.

January 21-25, American Institute of Electrical Engineers: Winter general meeting, Hotel Statler, New York. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

January 24-25, Steel Plate Fabricators Association: Annual meeting, Palmer House, Chicago. Association address: 37 W. Van Buren St., Chicago 5. Secretary: J. Dwight Evans.

January 27-31, Associated Equipment Distributors Association: Annual meeting, Hotel Conrad Hilton, Chicago. Association address: 360 N. Michigan Ave., Chicago. Secretary: P. D. Herman.

January 28-30, Truck-Trailer Manufacturers Association: Annual meeting, Shamrock Hotel, Houston. Association address: 1024 National Press Bldg., Washington 4. Managing director: John B. Hulse.

January 31-February 1, American Society for Metals: Mid-winter meeting, William Penn Hotel, Pittsburgh. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

February 7-8, Instrument Society of America, New York Section: Power plant symposium, Hotel Statler, New York. Society address: 551 Fifth Ave., New York 17. Secretary: Richard Rimbach.

February 11-15, National Sand & Gravel Association: Biennial meeting, Hotel Conrad Hilton, Chicago. Association address: 1325 E St. NW, Washington 4. Executive secretary: Vincent P. Ahearn.

February 12, Chamber of Commerce of the United States: National conference on labor relations, Pittsburgh. Chamber address: 1615 H St. NW, Washington 6. Executive vice president: Arch N. Booth.

February 14-15, Foundry Educational Foundation: Technical and university advisory committees conference, Hotel Statler, Cleveland. Foundation address: Terminal Tower, Cleveland 13, O.

February 16-21, Automotive Electric Association: Annual meeting, Edgewater Beach Hotel, Chicago. Association address: 800 Michigan Bldg., Detroit 26. Secretary: S. W. Potter.

February 18-19, National Association of Aluminum Distributors: First annual meeting, Hotel Drake, Chicago. Executive secretary: Raymond L. Collier.

February 18-20, National Crushed Stone Association: Annual meeting, Hotel Conrad Hilton, Chicago. Association address: 1415 Elliot Place NW, Washington 7. Administrative director: J. R. Boyd.

February 18-20, American Management Association: Personnel conference, Palmer House, Chicago. Association address: 33 W. 42nd St., New York.

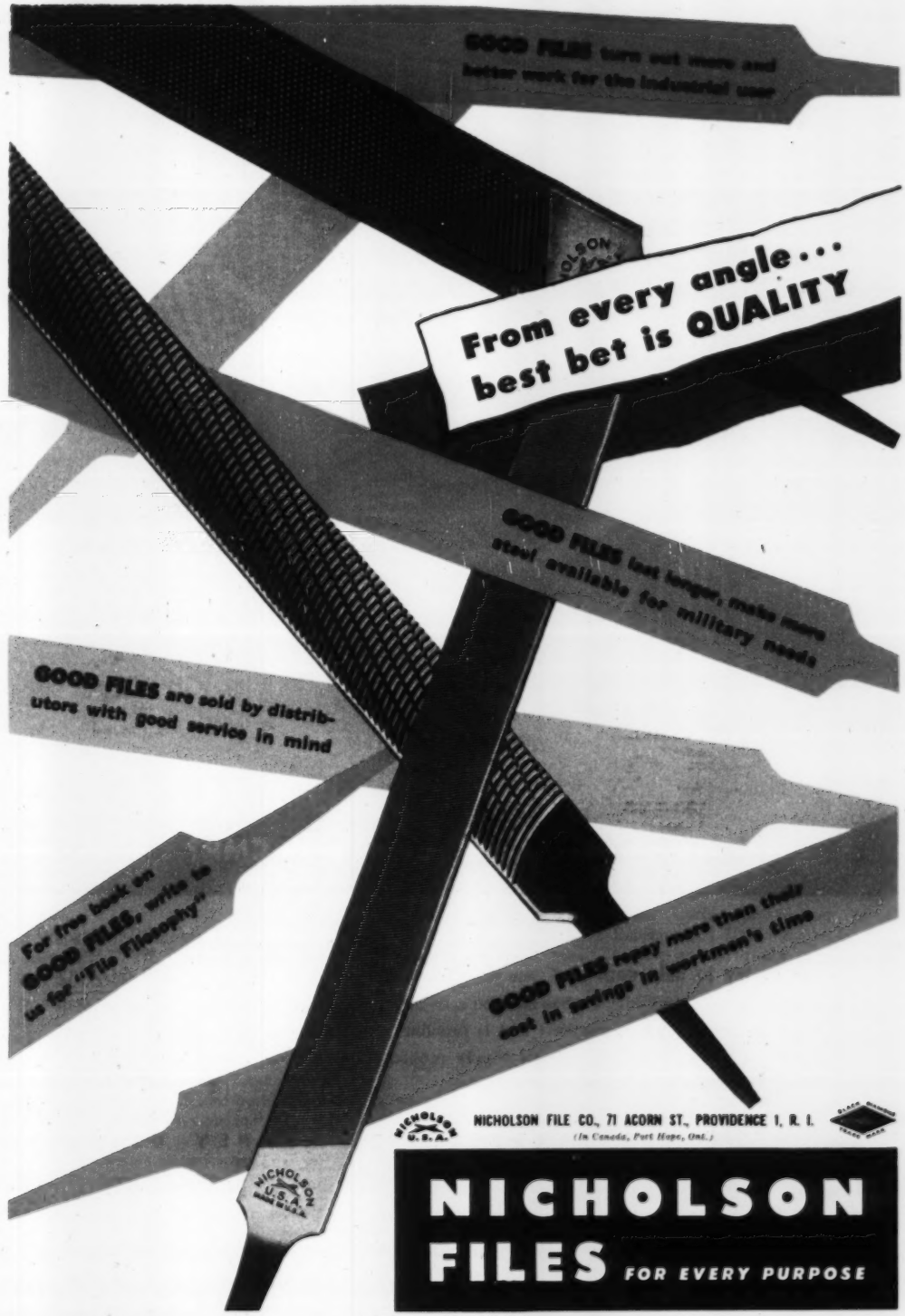
February 18-21, American Institute of Mining & Metallurgical Engineers: Annual meeting, Hotel Statler, New York. Institute address: 29 W. 39th St., New York. Secretary: Edward H. Robie.

February 21-22, Society of the Plastics Industry (of Canada) Ltd.: Annual conference, Royal York Hotel, Toronto. Society address: 67 W. 44th St., New York 18. Executive vice president: William T. Cruse.

February 25-28, Materials Handling Conference: Purdue University, sponsor. Address: W. Lafayette, Ind.

†**February 25-28, Industrial Ventilation Conference:** School of Engineering, Michigan State College, E. Lansing, Mich. Secretary: K. E. Robinson, Division of Industrial Health, Michigan Dept. of Health, Lansing, Mich.

February 28, Bituminous Coal Research Inc.: Annual meeting and exhibit, Edgewater Beach Hotel, Chicago. Address: 804 Southern Bldg., Washington 5. Secretary: C. A. Reed.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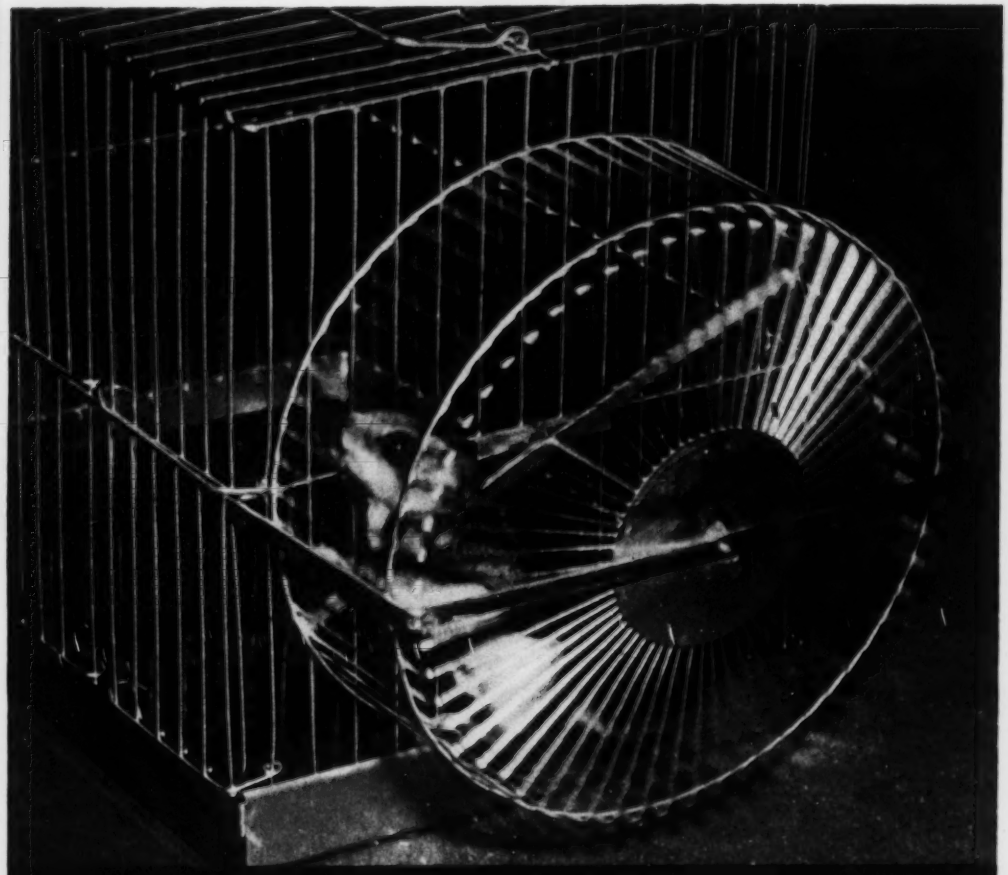

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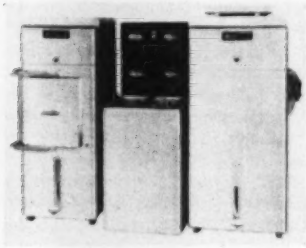
New Products and Equipment

Furnace Heat Treats Small Tools

USE REPLY CARD—CIRCLE No. 1

Heat-treating furnace that provides complete setup for small tools is announced by Waltz Furnace Co., 1901 Symmes St., Cincinnati, O. Furnace has temperature range sufficiently broad to permit work on all high speed steels, even the cobalt type. Unit



. . . ranges to treat all high speed steels

includes preheat and drawing furnaces, atmosphere generator and two quench tanks.

Drawing furnace is recirculating air type to permit close temperature control in the lower ranges. Maximum drawing furnace temperature is 1200°F, while those for the hardening and high temperature furnaces are 1850°F and 2400°F respectively. All three furnaces are 8 inches wide, six inches high and 14 inches deep. Feeding elements are formed of 80-20 nickel-chrome wire.

Unit Works Valve Rocker Arms

USE REPLY CARD—CIRCLE No. 2

Extreme rigidity in central section and utmost safety through automatic shutoff devices are two features incorporated in a three-way trunnion machine announced by Buhr Machine Tool Co., Ann Arbor, Mich. Made with two horizontal 30-inch way hydraulic units and one 8-inch way hydraulic unit, machine is designed to process 880 valve rocker arms per hour at 100 per cent efficiency.

Machine clamps and ejects parts automatically. Its tooling includes 6-station trunnion type fixture loading four parts to a station, with power indexing for the trunnion; a 20-spindle right-hand head, 12-spindle left-hand head and four-spindle rear head. Side heads have cluster type construction.

Dual Predetermined Counter

USE REPLY CARD—CIRCLE No. 3

Where rate of material flow is extremely rapid, applications can be found for a predetermined electronic counter announced by Potter Instrument Co. Inc., Great Neck, N. Y. Counter's dual predetermining feature facilitates slowing down final stage of a cycle to get satisfactory operation of gates and shears. When parts count on a high speed conveyor belt approaches selected batch total, belt speed is reduced by electronic counter to permit precise actuation of a gate as final part is counted. Unit acts similarly in processing continuous strip material, where it provides relay control over roller drives.

Model 243 continuously recycles, accepting counts to 1000 per second and resetting instantly after each output operation without missing a count. By dial switch settings, any two numbers from 1 to 9999 can be chosen as counting points at which control actuation is to occur.

Belt Clears Slugs and Waste

USE REPLY CARD—CIRCLE No. 4

Metzgar Co., 409 Douglas St. N. W., Grand Rapids 4, Mich., offers equipment to users' specific needs for conveying slugs and waste from

REPLY CARDS

on page 97 will bring you more information on any new products and equipment in this section.

inside of punch presses. Equipment is adapted from the company's standard power belt principle, built with removable trough baffles and equipped with 12-inch neoprene

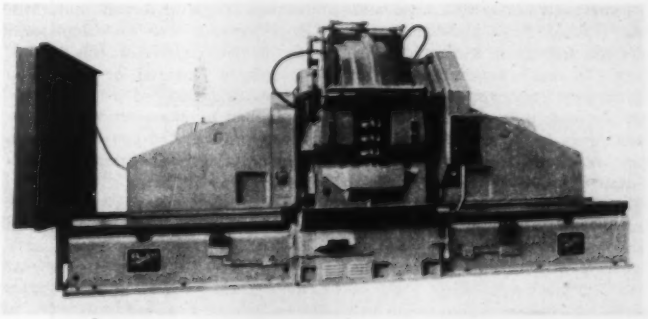
. . . built to users' press specifications

belt on 6-inch drum pulleys. Pulleys are driven by a ¼-hp gear motor. Unit illustrated is 66 inches long and operates with ball bearings throughout.

Unit Is Water-Oil Separator

USE REPLY CARD—CIRCLE No. 5

Simple and efficient operation in reducing water content of oil to less than 1/10 of 1 per cent is attributed to a water-oil separator, the PurDry, developed by Honan-Crane Corp., 636 Wabash Ave., Lebanon, Ind. Unit is applicable for turbine and hydraulic oils, or for



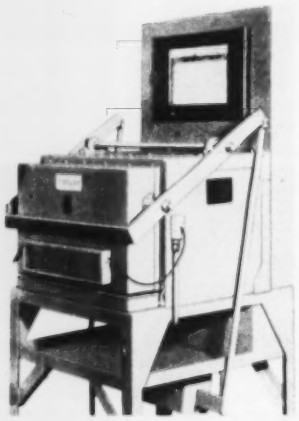
. . . processes 880 valve rocker arms per hour at 100 per cent efficiency

any instance where water causes an industrial oil purification problem. In addition to separating water, unit performs a complete filtering service for removal of solid contamination, acids and other sludge-forming products of oxidation. Operating continuously on bypass circulation, the separator is said to keep oil in safe operating condition at all times. Both filter and purifier units are included to deliver thoroughly cleaned oil.

Box Furnace Line Expanded

USE REPLY CARD—CIRCLE No. 6

Addition of a larger size type BL electric box furnace to its line of standard chamber sizes is announced by Cooley Electric Mfg. Corp., 915 Daly St., G-9, Indianapolis 7, Ind. Increased chamber size of 15 x 12 x 30 inches extends capacity to handle greater production and larger units of work. Design of this unit employs the company's embedded type heating fixture that protects heavy element wire from atmospheric attack. To obtain maximum and uniform heat distribution, elements are formed in ceramic slabs and located in each side, the bottom, top, rear wall and door of the furnace. Because of elements' slab shape, they are made to act as baffle walls. Unrestricted air spaces completely surround the elements, creating a natural air convection, and further equalizing temperatures. In element maintenance, slab form makes each removable as a unit through the door opening, cutting time required and simplifying the process. All furnace sizes use the movable wall-type door, to seal the front end of the furnace from high heat losses.

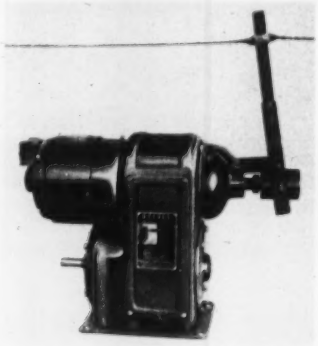


. . . added chamber size is 15x12x30 inches

Mechanical Automatic Control

USE REPLY CARD—CIRCLE No. 7

Reeves Pulley Co., Columbus, Ind., announces availability of mechanical automatic control on its series 1000 fractional horsepower vari-speed motordrives. Formerly only handwheel and electric remote controls were offered in this series. Series is made in $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, and $\frac{3}{4}$ hp sizes, having speed variations as high as 10:1.



. . . three types of control are available

Stacker and Power Booster

USE REPLY CARD—CIRCLE No. 8

Stacker and power booster, called Universal model 600-U, is offered by Industrial Engineering & Mfg. Co. Inc., Brimfield, Ind. Model stacks, loads or acts as horizontal conveyor for miscellaneous cartons, bags or boxed materials. Swivel caster base with floor-locking device comprises the mount. Trough is elevated or positioned easily by means of v-type frame controlled by acme screws. Handwheels are located conveniently on side of trough, speeding the positioning operations.

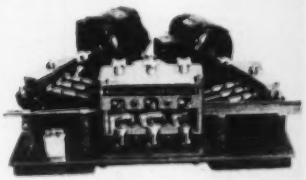
Trough lengths of 12, 14 and 16 feet and rough top belt widths of 12, 16 and 18 inches are available. High-tensile 12-gage steel forms the trough. To accommodate varied sizes of units, guard rails have in and out adjustments of 6 inches. Power is supplied by a $\frac{3}{4}$ hp reversible motor mounted inside channel frame. Belt speed is 54 fpm, maintained by spur gear reduction unit. Roller feeders, 24 inches long, or power belt feeders are available as optional equipment.

Rod or Tube Straightener

USE REPLY CARD—CIRCLE No. 9

Waves, bends and kinks are removed from cut lengths of 1/16-inch rod or tube up to $\frac{1}{4}$-inch OD thin wall tubing by the model AYZ rotary straightener made by Mackintosh-Hemphill Co., 901 Bingham St., Pittsburgh 3, Pa. Basic feature of the model, smallest in the company's line of 12 machines, is its roll arrangement. This design uses three sets of identically contoured twin cross rolls, all power driven.

Rod or tube is straightened by revolving cut lengths of stock spirally through the three sets of cross rolls. All six $\frac{3}{4}$-inch diameter rolls are angularly adjustable, driven by two 1/6-hp motors. Operating speed on rod or tube is 100 fpm. Straightener is equipped completely with antifriction bearings, is 22 inches wide, 19 inches deep and 8 inches high.

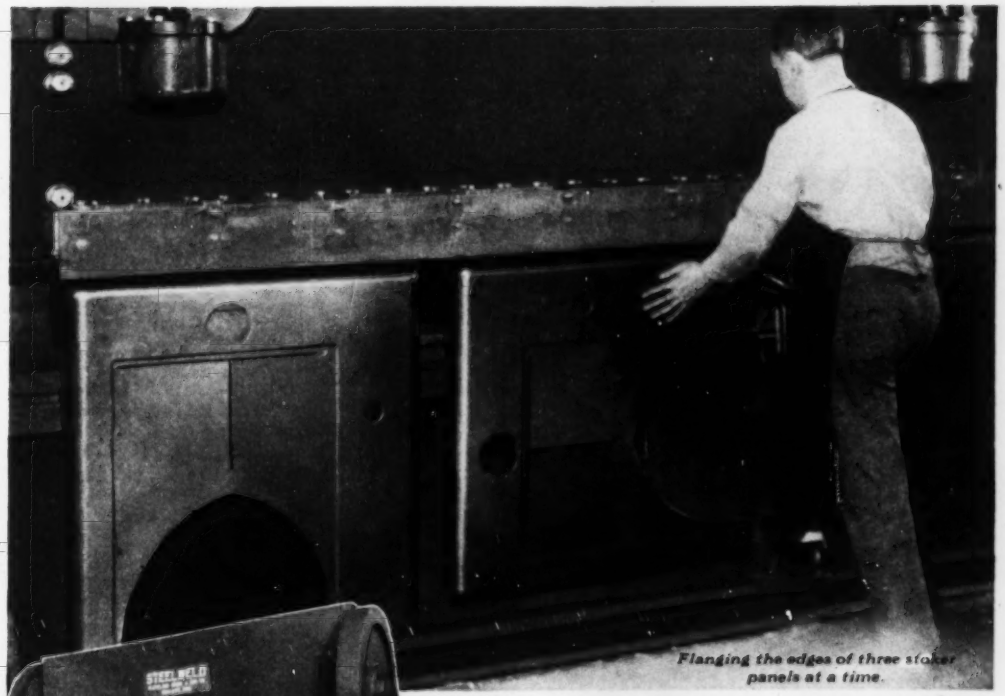


. . . has three sets of twin cross rolls

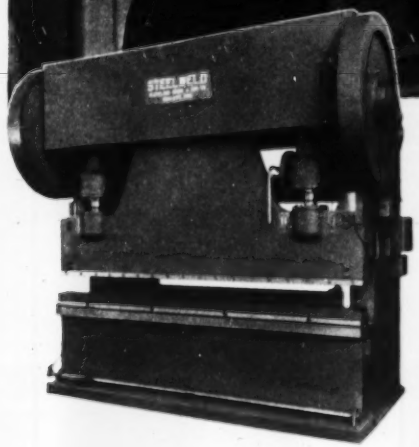
Assembly, Office Work Benches

USE REPLY CARD—CIRCLE No. 10

Line of work benches and tables for production, assembly and factory office use are available from Sturdi-Bilt Steel Products, 624 S. Michigan Ave., Chicago 5, Ill. Mass production techniques employed in manufacture permit economical but precise construction throughout. Units have heavy rolled steel frames; legs tension bolted to frame, insuring permanent rigidity; adjustable feet that permit raising or lowering to level bench on uneven floors; and steel draw-



Flanging the edges of three stoker panels at a time.



NEATLY ROUNDED FLANGES

Just another simple job on STEELWELDS

Did you ever have a problem in metal forming? Did you ever wonder how to make some unusual shape — and do it at the least possible cost? Many Steelweld customers have been confronted with such situations. Very often they have discovered the solution to be in their Steelweld press right in their own shop.

A stoker manufacturer had a problem on how to flange the edges of stoker panels. They had to be round and neat on three sides. He found the answer in his Steelweld. Now he flanges the edges of three panels per ram stroke quickly and accurately.

The varied work and the simplicity with which it can be done, makes a Steelweld press an unusually versatile tool that is appreciated more and more as its possibilities are discovered with actual experience. Write for booklet below and get the details.

GET THIS BOOK!

CATALOG No. 2010 gives construction and engineering details. Profusely illustrated.

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BRAKING • FORMING • BLANKING • DRAWING • CORRUGATING • PUNCHING

PRECISION

TO LESS THAN .0005 INCH

on H & S worms and worm gears

• Checking an H & S Worm & Gear on a precision inspection fixture for accuracy to less than .0005" on both indexing and lead...an accuracy that insures perfect thread contour and balance. These exceedingly close limits are obtained by the company's use of its own exclusively designed grinding machines. It's precision in manufacturing that insures higher efficiency, longer life and quieter operation. Yet this extreme precision is only one of seven outstanding features that are your guarantee of the finest worms and gears possible.

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U.S.A.

Send note on Company Letterhead for 488-Page Catalog 49

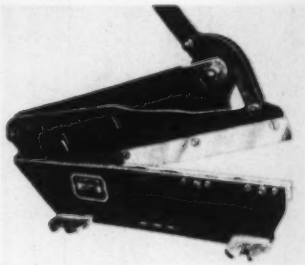
ers included as optional equipment.

Users have a choice of two warpproof tops, both lacquered and waxed, oil and grease resistant: The first is hard-rock maple, 1⅝-inch thick, cross-grain laminated top and bottom with framed core; the second is pressed wood, also 1⅝-inch thick, having framed center core built with cross bars and blocks. Two sizes offered are 23 x 46½-inch top and 23 x 60-inch top, both 33½ inches high.

Cutter Has 14-inch Blade

USE REPLY CARD—CIRCLE No. 11

Slitting shear with 14-inch blade, the Samson No. 40, is offered by Julius Blum & Co. Inc., 532-540 W. 22nd St., N. Y. 11, N. Y., for cutting wide strips of light gage metal. Offset frame slits sheets of any length or width, and blade length makes fewer strokes necessary when cutting wide sheets. Shear's capacity is ⅛-inch mild steel sheet or plate. Frame is made of steel plate; net weight is 140 pounds. Model 40-S (see cut) has straight blade. Model 40-C has special blade for shearing corrugated sheet to No. 16 gage.



. . . fewer strokes for cutting wide sheets

Motor Line Expanded to 125 hp

USE REPLY CARD—CIRCLE No. 12

Industrial Motor Division, Robbins & Myers Inc., Springfield 99, O., announces addition of four frame sizes, expanding its line of standard motors to include 125 hp ratings. Highest previous rating made by the company has been 50 hp. To make the four sizes suitable for all-weather operation, steel parts have a baked, rust-resisting undercoating of the company's inhibitor, Robinite. Power

2 names for quality assurance

POLLOCK
BUILDER FOR THE IRON AND STEEL INDUSTRY
Since 1863

Bailey ENGINEERS

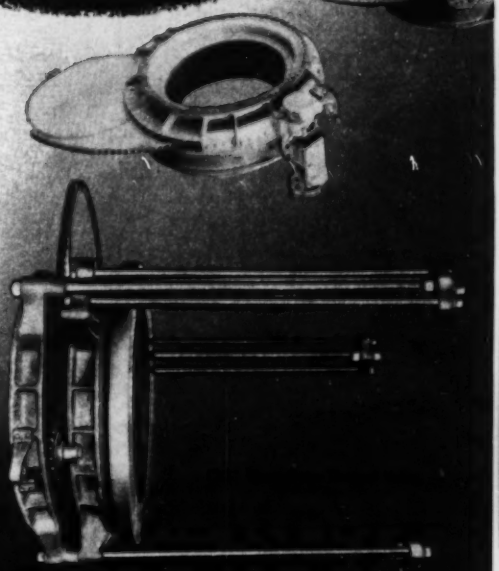
POLLOCK FABRICATES VALVES FOR WILLIAM M. BAILEY COMPANY

It's double assurance when an accepted leader in its particular field teams its engineering "know how" with the production "know how" of another leader in the field of precision construction.

For firms whose successful operations are assured by careful equipment selection, the Wm. M. Bailey Company of Pittsburgh is the preferred supplier of mechanical and thermal expansion valves.

Buyers of Bailey valves have an additional assurance when The William B. Pollock Company of Youngstown is entrusted with the precision production job.

Since 1863 Pollock has been the important **NAME** in the iron and steel industry for engineering, construction and erection of blast furnace and steel plant equipment throughout the entire world.



● The William B. Pollock Company fabricates to Bailey specification mechanical valves in the following sizes—54" x 42", 60" x 48", 66" x 54" and 72" x 60". These sizes are used mainly in the steel industry in blast furnace gas mains, gas washers, precipitators, boiler plants and coke plants, as well as chemical and metallurgical plants.

In addition, Pollock makes most Bailey Thermal Valves, from 60" x 48" to 120" x 104". These thermal valves are used mainly in the steel industry in the blast furnace plants—in gas mains, gas washers, etc.

POLLOCK
Since 1863
BLAST FURNACES • HOT METAL CARS AND LADLES
CINDER AND SLAG CARS • INGOT MOLD CARS
CHARGING BOX CARS • WELDED OPEN HEARTH LADLES

THE WILLIAM B. POLLOCK COMPANY
YOUNGSTOWN, OHIO
STEEL PLATE CONSTRUCTION • ENGINEERS
FABRICATORS • ERECTORS

LOOK AT THE BULL O' THE WOODS GO, NOW THAT HE'S GOT A GREEN LIGHT FROM UPSTAIRS! HE'S BEEN ITCHING TO CLEAN THAT JUNK OUT OF HERE FOR YEARS!
YEAH, HE WELCOMED THAT SCRAP REPRESENTATIVE LIKE A LONG LOST BROTHER! HAD TONS OF OLD MACHINERY AND BROKEN PARTS LINED UP BEFORE THE GUY EVER GOT HERE!
TODAY IT'S JUNK -- TOMORROW IT KEEPS A MILL FROM SHUTTIN' DOWN! MAYBE KEEPS US FROM SHUTTIN' DOWN, TOO... WHO KNOWS?
Copr. 1952 by NEA Service, Inc. T. M. Reg. U. S. Pat. Off.
J.R.WILLIAMS

America's greatest treasure hunt
is now underway!

It's a hunt for scrap metal of all kinds desperately needed to keep production of everything for defense and civilian needs at peak levels. Some 9,000 steel salesmen working with local Chambers of Commerce Committees are calling personally on every business establishment where there is a possibility of locating metal not now being used. (For example:—a small button works scrapped 20 tons of obsolete machinery.) The businessman is then requested to sell his old steel or iron or copper or aluminum to a local scrap dealer who will sort, prepare, and resell it to the mills and foundries. *Help your local scrap representative when he calls, or if he has already called on you keep looking for scrap.* Junk your worn-out and broken machines and equipment now! Then put in a call to your local scrap dealer!

REMEMBER — STEEL IS 30% SCRAP!

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH 30, PA.

J&L STEEL

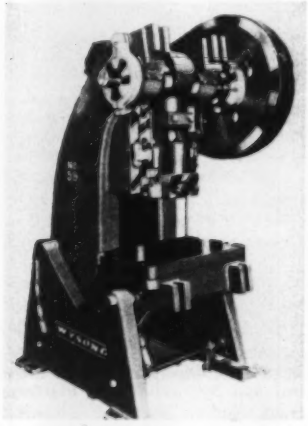
lead-ins are sealed at the motor shell with a nonhardening compound.

Extra-wide prelubricated ball bearings are greased to resist adverse conditions of dust, temperature, humidity and speed. Bearings are designed to require lubrication only every five years under normal operating conditions. Coils are insulated individually, not in phase groups alone, to provide added protection. The four ratings are made in NEMA frames 444, 445, 504 and 505.

Open Back Punch Press

USE REPLY CARD—CIRCLE No. 13

Open back, inclinable punch press, weighing 55 tons, is offered by Wysong & Miles Co., Greensboro, N. C. Among features attributed to the press are square pin type clutch with three engage-



. . . has square pin clutch, nonrepeat unit

ment points and built-in nonrepeat unit. Hardened tool steel wear plates are replaceable without removing flywheel. To help assure operator safety, cam operation and spring loading of clutch finger provide complete clutch disengagement. Also featured is the 12-inch die space.

Crankshaft is an alloy steel forging, mounted in bronze lined bearings. Standard brake is split type with spring tensioner; use of intermittent brake is optional. To insure accurate bearing, slide is hand scraped and adjustable with

10-point FIRE PROTECTION

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Fire protection is serious business. A single automatic sprinkler may be called on to decide the fate of your company, whether it is a small single-plant operation or a large multi-million dollar corporation. Insist on *all* the plus values offered with *10 POINT Fire Protection*. Here's what you get:

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8 INSPECTION AND MAINTENANCE: Low cost service keeps fire-fighting equipment in fire-fighting condition.

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NEW!

Lock 'em—and Leave 'em

● If you have a problem lifting, moving or containing bundles of bars, rods, or pipes—forget it. Get some of the new AMERICAN Bundling Chains with automatic locks. They're easy to hook up, and once you lock them, they stay locked. Yet you can unlock them with a flip of the fork. Satisfied users tell us they have made possible real savings in handling costs.

Write today for information on Bundle Locks or the 1001 other items in the complete AMERICAN Chain line.

(Patent Pending)

ACCO

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

York, Pa. Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

TRADE MARK

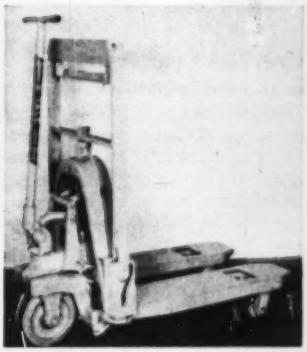
American Chain

ball and socket screw. V-belt drive is standard, but flat belt, individual motor drive can be applied.

Lift Handles Skids and Pallets

USE REPLY CARD—CIRCLE No. 14

Hand lift pallet trucks, made by Philadelphia Division, Yale & Towne Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa., are available with dual purpose superstructure that handles 7 and 12-inch skids and single or double-faced pallets. When superstructure is in raised position, it is clamped vertically to provide a backrest for the pallet load on the truck. Lowered, it is adjustable to either 7 or 12-inch skid heights by simple cam arrangement.



. . . dual superstructure does the job

Application should be advantageous for firms with insufficient volume to maintain specialized equipment for each type load. Truck is available in both mechanical and hydraulic lifts. Platform truck can be equipped similarly, permitting it to handle several sizes of skids.

Magnetic Coolant Separator

USE REPLY CARD—CIRCLE No. 15

Sundstrand Magnetic Products Co., Rockford, Ill., offers a compact magnetic coolant separator for use on many types of grinding, honing and gear shaving machines. Separator is completely automatic; uncomplicated construction holds maintenance costs to a minimum. Coolant is cleaned as liquid passes under a revolving drum of permanently charged Alnico. Separated material is removed from the drum by a scraper and deposited

When considering Induction Heating Equipment for Hardening, Brazing, Soldering, Annealing, Forging, or Melting—

remember

TUBE OSCILLATORS
for radio frequencies, nominally 450,000 cycles per second.

MOTOR GENERATORS
for frequencies up to 10,000 cycles per second.

TOCCO, since it manufactures both the motor-generator and tube oscillator type induction heating unit, (60 cycle equipment, too, when needed) offers you a completely unbiased equipment recommendation—the right equipment to help you cut costs, speed production and improve product quality.

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Purchasing Agent

FRANK A. DIEL
General Manager
JAMES J. MAHER
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JOSEPH F. SMITH
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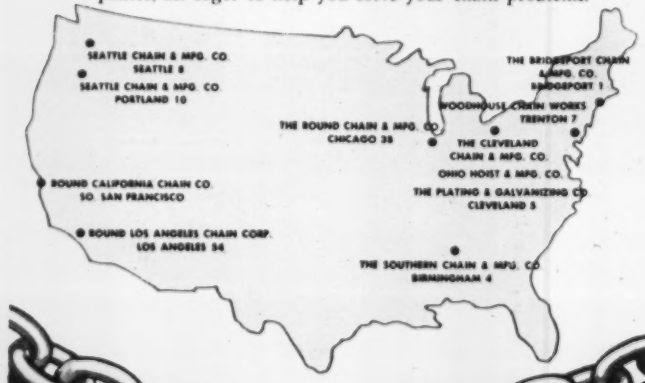
THE BRIDGEPORT CHAIN & MFG. CO.

Founded in 1887. Pioneered in Triumph (Lockweave) Pattern and other types of weldless chain. Became associated with the Round group in 1928. Plant modernization program undertaken several years ago is now nearing completion.

ONE OF THE COMPANIES THAT MAKE

Round **CHAIN**

The nationwide Round organization is made up of many men like Frank Diel and his associates . . . experienced, capable chain men who are respected throughout the industry. Practical chain men have been at the head of each Round firm since the first of the companies was founded in 1869. Today there are ten Round Chain Companies, all eager to help you solve your chain problems.



Round **CHAIN COMPANIES**

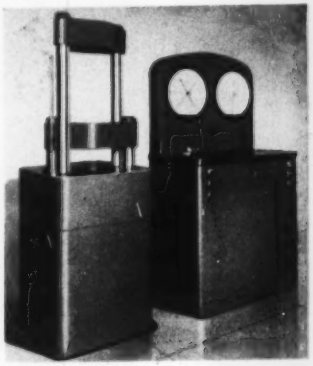
THE OLDEST NAME IN ROUND CHAIN

in an easily changed receptacle. Unit can often be placed directly on top of machine tank where it requires little or no additional floor space or piping. Overall length, including receptacle for separated material is 28 inches. Height, including receptacle is 23 inches; width is 10¼ inches.

Universal Testing Machine

USE REPLY CARD—CIRCLE No. 16

Improved universal testing machine that has 120,000 pounds capacity is announced by Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa. Designated model 120-H, the tester has several features in-



. . . has capacity of 120,000 pounds

cluded on the company's larger machines. One of these, hydraulic loading piece separated from control unit, isolates recoil from breaking test specimens and permits adjusting maximum or lazy hands with minimum drag.

Loading speed can be varied infinitely between 0 and 2 inches per minute. Vertical distance between gripping heads for tension tests or between platens for compression tests may be set anywhere from 1 to 24 inches, the latter including the stroke. Two ranges, 0 to 120,000 and 0 to 30,000 pounds are standard. Any two of six ranges, including 0 to 6000, 0 to 12,000, 0 to 24,000 and 0 to 60,000 are optional.

Standard Industrial Sander

USE REPLY CARD—CIRCLE No. 17

No. 870 7-inch standard industrial sander designed for fast sanding, wire brushing, grinding and

polishing on metal, wood, concrete and other surfaces, is announced by Millers Falls Co., Greenfield, Mass. The lightweight device features precision machined heat-treated alloy steel gears, pinions and spindles, grease sealed ball and needle bearings throughout.

Corrosion Resistant Coating

USE REPLY CARD—CIRCLE No. 18

A material with corrosion resistant properties for coating the inside of their standard line of VS-800, hand-operated, solvent vapor degreasers is announced by Detrex Corp., Detroit 32, Mich. The nonporous, phenolic type coating, called FF-1, is impervious to any dissolving effect by trichlorethylene and perchlorethylene.

Variable Speed Torque Converter

USE REPLY CARD—CIRCLE No. 19

Model 142XR Zero-Max variable speed torque converter is announced by Revco Inc., Minneapolis 4, Minn. It has variable speed from 0 to ¼ input speed in either direction. Speed and reverse controls are separate levers and transmission can be reversed at any time with or without load on output shaft.

Stripping Oil for Metal Coating

USE REPLY CARD—CIRCLE No. 20

Archer - Daniels - Midland Co., Cleveland, O., offers an oil stripping medium for metal coating. It is stable so that decomposition is negligible.

Antifriction Bearing Lubricant

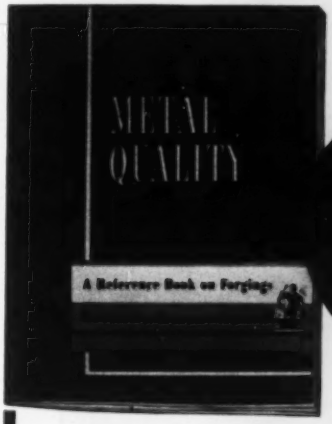
USE REPLY CARD—CIRCLE No. 21

Texaco High Temp grease, developed by The Texas Co., New York, N. Y., is an antifriction bearing lubricant that gives protection at temperatures up to 300° F for continuous operation and 350° F for intermittent operation. Its features include water and oxidation resistance.

Lubricant for Tin Plate

USE REPLY CARD—CIRCLE No. 22

Ironsides Co., Columbus, O., has developed a lubricant that duplicates all the chemical characteristics of palm oil. Palmoshield, made from all domestic materials,



Engineering, production and economic advantages obtainable with forgings are presented in this Reference Book on forgings. Write for a copy.

Forgings fortify a mechanism with a factor of greater safety that is otherwise unobtainable... There is no substitute for the toughness and strength inherent in the compact, fiber-like flow line structure of closed die forgings. Consult a Forging Engineer about the correct combination of mechanical properties which forgings can provide for your product.

DROP FORGING ASSOCIATION
605 HANNA BLDG. • CLEVELAND 15, OHIO

Please send 60-page booklet entitled "Metal Quality — How Hot Working Improves Properties of Metal", 1949 Edition.

Name .....
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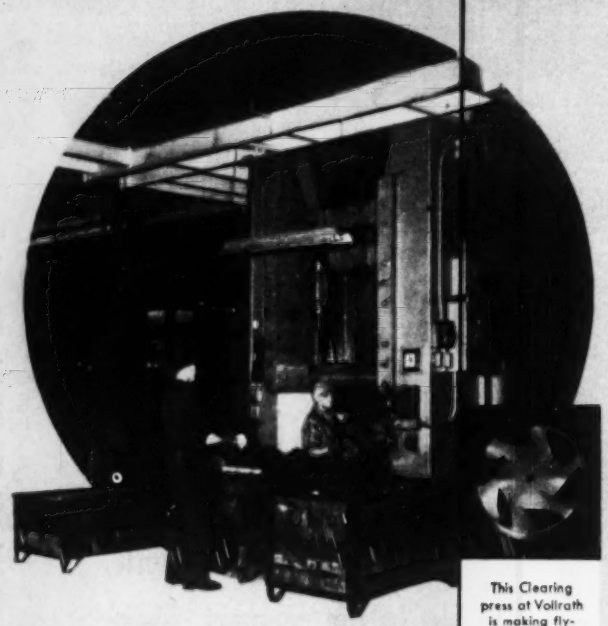
LISTEN to the difference



This Clearing press at Vollrath is making flywheel fans for lawn-mower engines.

It may be strange to think of a metal-forming press as QUIET in operation, but that's what The Vollrath Company of Sheboygan, Wisconsin, think about their Clearings in comparison to their other presses. Since this company has been making the famous Vollrath Ware since 1874, you can be sure they know presses, and are putting proper value on an important consideration.

Their Clearing presses require definitely less maintenance than their other, less quiet presses. That, of course, is the payoff. The Vollrath people know that noisy operation means strain and wear—and ultimate cost. That's why they buy Clearings.

When you buy or specify a press, we suggest you listen to the difference. It's a good way to save money.

CLEARING MACHINE CORPORATION
6499 WEST 65TH STREET ★ CHICAGO 38, ILLINOIS

CLEARING PRESSES
THE WAY TO EFFICIENT MASS PRODUCTION

looks, feels, acts, handles like palm oil and requires no changes in rolling mill operation. It is subject to exact chemical control. Free fatty acid content does not vary from batch to batch and can be specified by the user.

Removes Oxidized Oils

USE REPLY CARD—CIRCLE No. 23

Designated as 937-T, an alkali surface conditioner for removing oxidized oils from aluminum core driers, aluminum, magnesium and steel core plates, forge dies, etc., is introduced by Nielco Laboratories, Detroit 19, Mich. It is made up of a fixed percentage of free alkalies combined with buffers, inhibitors and surface active agents.

Inserts Clinch Nuts

USE REPLY CARD—CIRCLE No. 24

Clinch nut tooling, announced by Richard Brothers Division, Allied Products Corp., Detroit 11, Mich., enables use of conventional die construction. Same die will insert nuts and also pierce, form or blank the product. Insertion is performed simultaneously with other production steps.

Valve and Flange Covers

USE REPLY CARD—CIRCLE No. 25

ChemKovers designed to provide protection against leakage and permit complete operating freedom are offered by Mine Safety Appliances Co., Pittsburgh, Pa. Made of Dynel, covers have sufficient strength to contain sprays resulting from gasket or packing failures of pressurized lines.

Safety Connecting Links

USE REPLY CARD—CIRCLE No. 26

Universal design in Wedglok safety connecting links for carbon and alloy chain users is announced by Interstate Drop Forge Co., Milwaukee, Wis. Only two sizes are needed to correct any size chain

USE A
REPLY CARD
Just circle the corresponding number of any item in this section for more information.

Helpful Literature

75. Contour Machines

DoALL Co.—Manufacturing shortcuts made possible by contour machines are described in 16-page illustrated brochure No. 51-702. These production band type contour machines are expressly designed for sawing, filing and polishing operations. Details of standard machines, available accessories, contour machining techniques, tool selection and specifications are presented.

76. Plant & Building Design

York Engineering & Construction Co.—Engineering services offered by company which include design of buildings, foundations and equipment for industrial plants, as well as project coordination and control are summarized in 4-page folder.

77. Acetate-Bonded Aluminum

Reynolds Metals Co.—Acetate-bonded aluminum, a pliable, printable, heat sealing material described and illustrated in 4-page bulletin, meets requirements for military packaging of wide variety of products. Usable with high speed automatic packaging machines, it is available in 2 to 25-in. widths.

78. Fine Seamless Tubing

Uniform Tubes—Line of fine seamless tubing available in sizes from 0.010 to ⅝-in. OD and in metal of most any desired analysis is covered in illustrated 4-page catalog entitled "Uniform Tubes." It also discusses plant facilities, specifications and applications in precision equipment. Data on Pointer tubing finer than human hair is included.

79. Armature & Field Coils

General Electric Co.—8-page illustrated bulletin GEA-5682 deals with features and other information on armature and field coils for transportation equipment. Techniques and insulations employed in producing coils for traction motors, generators, blower motors, amplidynes and similar units are covered.

80. Hydraulic Cylinders

Logansport Machine Co.—32-page catalog 200, section 2 presents diagrammatic and tabulated dimensional and engineering data necessary to correct selection of rotating and non-rotating hydraulic cylinders. Series shown is designed for operating pressures up to 750 psi and provides dependable power for pushing, pulling, lifting or holding operations.

81. Warm Air Heaters

Dravo Corp. — 8-page illustrated bulletin 526 is descriptive of Counterflo direct-fired warm air heaters which are designed for industrial space heating requirements. Offered on oil, gas and coal fired models, heaters have outputs ranging from 400,000 to 2,000,000 Btu per hour.

82. Welding Equipment

Victor Equipment Co.—64-page Apparatus catalog 20-C presents detailed information, specifications, drawings and photographs of line of welding and cutting equipment. Included are valves, gages, controls, regulators, torches, nozzles and many accessories and attachments.

83. Fuel Oil Heaters

Hauck Mfg. Co.—Steam type fuel oil heaters for heating heavy grades of fuel oil for satisfactory pumping and handling are illustrated and their specifications given in 6-page catalog No. 714. Heating capacities of heaters and preheaters are given. Oil temperature is automatically controlled.

84. Elevating Equipment

Economy Engineering Co. — Hand operated model D and electric powered model DH Shoplifter elevating machines of 500-lb capacity are subject of 2-page illustrated data sheet No. 235A. Platform raises loads from 5 in. off floor to height of 84 in. Casters assure portability.

85. Pyrometer Supplies

Minneapolis-Honeywell Regulator Co., Brown Instruments Div.—Technical data on application and use of thermocouple pyrometric supplies is included in 60-page illustrated Buyer's Guide No. 160-A. Complete line of all Brown standard thermocouple assemblies is detailed in catalog, along with special units and components.

86. Investment Castings

Casting Engineers, Inc. — Investment castings illustrated throughout 4-page folder No. 17 are example of parts of complicated contour and design that can be cast to finished dimensions, machining operations being eliminated. Most are produced within limits of plus or minus 0.004-in., some as close as 0.002-in.

87. Turret Lathe Tools

Bullard Co. — 56-page illustrated manual "Multi-Au-Matic and Vertical Turret Lathe Tools and Tool Application" shows standard and special tools and pictures typical machining operations that can be performed.

FOR MORE INFORMATION USE ONE OF THESE CARDS . .

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88. Rotary Work Feed Tables

Bellows Co.—16-page bulletin T-85 illustrates and describes rotary work feed tables having 10 and 22-in. table tops along with dimensional and specification data. Tables feed work to and under drill press spindles milling cutters, arbor and impact press rams and riveting heads. Electrical hook-up drawings for combining tables and other pneumatic devices are shown.

89. Bronze Bars

Buckeye Brass & Mfg. Co.—Complete size listing of fully machined, ready-to-use 13-in. long bronze maintenance bars and fully machined solid bars is found in folder of this company.

90. Voltage Regulators

Allis-Chalmers Mfg. Co.—Applications, construction and operation of Rocking Contact voltage regulators for small alternating current generators are covered in 4-page illustrated bulletin 14B6143A. Regulators can be used for many special applications such as speed, current and tension regulation. Capacities range up to 438 kva maximum at 3600 rpm.

91. Electric Air Heaters

Edwin L. Wiegand Co.—Portable and built-in electric air heaters used in industry and business are subject of 4-page folder F-1530. Convection, blower duct and radiant types are illustrated along with suitable automatic controls. Factory and office applications are shown.

92. Machining Copper Alloys

American Brass Co.—Practical information such as cutting speeds, feeds, tool rakes and clearances to be used on more than 40 different alloys are presented in 32-page, No. B-3 manual on Machining Copper Alloys. Recommendations are included on turning and cut-off tools, form tools, drills, reamers, taps, thread chasers, milling cutters and coolants. Tables show composition, physical constants and properties of copper, brass and bronze materials.

92. Metal Shears

Beverly Shear Mfg. Co.—"How to Use Your New Beverly" is title of illustrated pocket-size folder IC-1051 giving instructions for using throatless and slitting shears, inside slotter and cable cutter.

94. Dust Collection

Buell Engineering Co.—"The Collection and Recovery of Industrial Dusts" is title of 28-page illustrated catalog No. 101. What dust recovery can do for you, what dust is and techniques used in analysis of dust are among subjects covered. Factors which influence choice of equipment and descriptions of various types of Buell dust collectors for specific applications are covered in considerable detail.

95. Magnetic Separators

Jeffrey Mfg. Co.—Drum type magnetic separators for wet concentration and magnetic recovery are described and illustrated in 8-page bulletin 846. General data on each type available, plus typical operating results on certain magnetic materials are covered.

96. Fans & Blowers

Standard Electric Mfg. Co.—This 24-page illustrated catalog lists wide range of ventilating fans, air circulators, belt-driven exhaust fans, floor and window fans and other types of air moving equipment. Also included are spray booth fans and pressure and volume blowers.

97. Fluorescent Mercury Lamp

Westinghouse Electric Corp., Lamp Div.—In addition to complete physical description of JH-1 fluorescent mercury lamp which produces Golden White light, 4-page booklet A-6007 lists recommended applications. Light comparisons and tabulated technical and transformer data are also given along with diagrams of luminaires designed for this lamp.

98. Ribbed Steel Decking

Airtherm Mfg. Co.—Sizes, properties and load and stress data relative to ribbed steel decking used for roofing, wall partitions or as sub-base for concrete or aggregate flooring is presented in 8-page illustrated catalog 201. Decking is made in 22, 20 and 18-gage thicknesses and in 30-in. widths. Drawings of accessories used with decking are shown.

99. Outdoor Disconnects

Delta-Star Electric Co.—How the B-2K hook-operated disconnecting switches with an improved arrangement of high pressure silver-to-copper contacts and a hard drawn copper tubular blade is described in 6-page illustrated bulletin 5104. Single pole switches are rated 7.5 to 161 kv, 900 and 1200 amp.

100. Hydraulic Fluid

Monsanto Chemical Co.—Properties and performance data of Pydraul F-9 nonflammable type hydraulic fluid are found in 12-page illustrated booklet. Developed for die casting machines, turbines, hydraulic presses and other machinery, fluid has its attributes reported with charts and pictures.

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Air Hardening Type Die Steel

USE REPLY CARD—CIRCLE No. 27

Simonds Saw & Steel Co., Fitchburg, Mass., offers an air hardening type of die steel for longer lasting punches and dies where greater production runs are desired between sharpenings. The nondeforming type die steel is spheroidize annealed for good machinability and consistently uniform hardenability. It is furnished in 43 standard stock sizes from ½ x 2 inches to 2 x 10 inches in 36-inch lengths.

Precision Tools for Chucking

USE REPLY CARD—CIRCLE No. 28

A line of precision tools for internal or external chucking of parts and tools during turning, grinding or inspection operations is announced by Scully-Jones & Co., Chicago 8, Ill. Roll-Lock mandrels, arbors and chucks use a new principle for creating an extremely rigid and accurate centering or shrink fit which allows transmission of the maximum given torque, thrust and accuracy.

Protection Against Rust

USE REPLY CARD—CIRCLE No. 29

Liquid Stainless Steel, available from Slip-On Inc., New York 13, N. Y., is stainless steel reduced to microscopically fine form and combined with vinyl plastics to form a quick drying liquid. The surface coating has the corrosion resistance and impermeability to moisture of 18/8 type No. 302 stainless steel. It can be applied by spraying, brushing or dipping.

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Vapor Stops Rust
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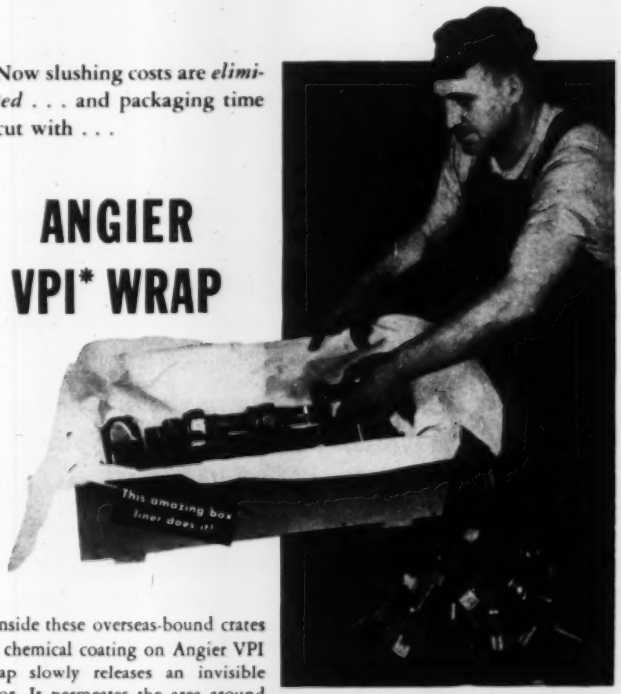

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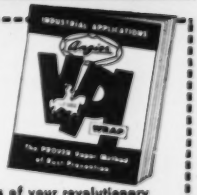

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The Market Outlook

RELIEF from the steel shortage may be just around the corner. Winds from around that corner are bringing straws of evidence that something's in the making.

End of the shortage in the last half of 1952 has been predicted repeatedly in the last several months by high officials in the nation's steel companies. Now from coast to coast come reports of a slight easing here and a slight easing there.

LISTENING IN—At Chicago, shops which fabricate structural seel report new inquiry is off. Also at Chicago, the demand for cold-rolled carbon steel sheets is noticeably easier. At Seattle, merchant bar demand is slow. At Los Angeles, warehouses say inquiries are depressed and that the "heat is off" fabricators' demand for steel. At San Francisco, warehouses report competition is increasing on some items and price concessions are being made. At Pittsburgh, most warehouses report stocks are becoming better daily. At Boston, carbon steel sheet and strip are easier, notably narrow cold-rolled strip for which mills have some space open for second quarter. Also at Boston, straight chromium stainless steel sheets are available in considerable quantities for delivery as close as February.

FULL SPEED AHEAD—In contrast to these instances you can cite dozens of cases where consumers are definitely not getting all of the steel they want or need, and orders placed some weeks ago are sufficient to keep steel mills running at capacity for all of the present quarter and probably through the second quarter.

But don't let that high rate of operations be your only guide. Since government controls on steel went into effect the rate of mill operations at any given time have been determined by the volume of orders placed six weeks or more earlier. So to get a clue as to the rate of mill operations and the availability of steel in the next few months, keep a close watch on the volume of orders actually being placed now. Listen, for example, to what a sales executive of one of the big steel companies says: "We still have a full order book, but the first quarter didn't fill up in such a rush as has been the practice in the last five years. I think the same thing may be true of the second quarter. The steel situation is easier; there isn't any question about it, although it isn't likely to be reflected in any way in mill operations in the first half of the year."

ANOTHER CLUE—Even in structural steel, currently one of the tightest spots, there's an indication that the second half of the year will bring an easing. Pittsburgh mills, where structural shapes are still in very heavy demand, think they will be looking for business in the last half of 1952 unless the government increases allocations for new building programs. One mid-South fabricator reports jobs are going at "murderous prices," with 18 to 20 bidders on every job.

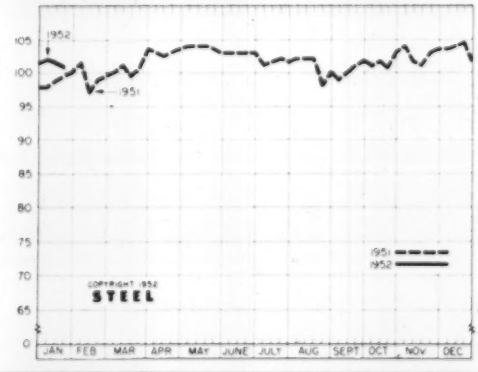
How much any easing in supply may be due to satiation of demand or how much due to government controls is a point for debate. You can find defenders for both sides. Certainly one reason why steel may be easier to get is the expansion in steel production capacity.

Meanwhile, the steel industry bends forward in its effort to fill the orders it has. One of the tightest products, in addition to structural steel, is plates, always in big demand in an armament program.

TROUBLES—In trying to keep operations at capacity, mills are encountering difficulties, and in the week ended Jan. 19 the estimated national rate of ingot production eased off ½ point further to 101 per cent of capacity. This rate yields 2,020,000 net tons. In addition to the scrap shortage, severe storms in the Pacific Coast area were handicaps last week to the steel industry.

HOLDING TIGHT—Prices of finished steel and pig iron have held steady for more than a year and likely will remain unchanged until the goverment takes action on the industry's combined wage-price problem. This may occur next month.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Jan. 19	Change	Same Week 1951	Same Week 1950
Pittsburgh	96	— 2*	99	95.5
Chicago	102.5	0*	101	96.5
Mid-Atlantic	101	— 0.5	99.5	86
Youngstown	106	0	106	102
Wheeling	100.5	— 3.5	97	100
Cleveland	103	+ 4.5	100	96.5
Buffalo	104	0	104	70
Birmingham	104	0	100	100
New England	85	— 6	89	80
Cincinnati	103	0	102	103
St. Louis	76	— 2	95	87
Detroit	106	+ 1.5*	105	103
Western	97	—10.5	103	90.5
Estimated national rate	101	— 0.5	99.5	93

Based on weekly steelmaking capacity of 1,999,034 tons for 1951-52; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950; 1,843,516 tons for 1949.

*Change from revised rate for preceding week.

The Metalworking Outlook—p. 25 Production-Engineering News—p. 61

Composite Market Averages

FINISHED STEEL INDEX, Weighted:	Jan. 17 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av. = 100)	171.92†	171.92†	171.92	171.92	117.90
Index in cents per lb	4.657†	4.657†	4.657	4.657	3.194
ARITHMETICAL PRICE COMPOSITES.					
Finished Steel, NT	$106.32†	$106.32†	$106.32	$106.32	$69.82
No. 2 Fdry. Pig Iron, GT	52.54	52.54	52.54	52.54	30.17
Basic Pig Iron, GT	52.16	52.16	52.16	52.16	29.56
Malleable Pig Iron, GT	53.27	53.27	53.27	53.27	30.79
Steelmaking Scrap, GT	43.00	43.00	43.00	46.33	31.17

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

† Preliminary.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Jan. 17 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.70	3.70	3.70	3.70	2.60
Bars, H.R., Chicago	3.70	3.70	3.70	3.70	2.60
Bars, H.R., del. Philadelphia	4.223	4.223	4.223	4.18	2.98
Bars, C.F., Pittsburgh	4.55	4.55	4.55	4.55	3.20
Shapes, std., Pittsburgh	3.65	3.65	3.65	3.65	2.50
Shapes, Std., Chicago	3.65	3.65	3.65	3.65	2.50
Shapes, del., Philadelphia	3.918	3.918	3.918	3.90	2.64
Plates, Pittsburgh	3.70	3.70	3.70	3.70	2.65
Plates, Chicago	3.70	3.70	3.70	3.70	2.65
Plates, Coatesville, Pa.	4.15	4.15	4.15	4.15	2.65
Plates, Sparrows Point, Md.	3.70	3.70	3.70	3.70	2.65
Plates, Claymont, Del.	4.15	4.15	4.15	4.15	2.65
Sheets, H.R., Pittsburgh	3.60-75	3.60-75	3.60-75	3.60-75	2.50
Sheets, H.R., Chicago	3.60	3.60	3.60	3.60	2.50
Sheets, C.R., Pittsburgh	4.35	4.35	4.35	4.35	3.20
Sheets, C.R., Chicago	4.35	4.35	4.35	4.35	3.20
Sheets, C.R., Detroit	4.55	4.55	4.55	4.55	3.335
Sheets, Galv., Pittsburgh	4.80	4.80	4.80	4.80	3.55
Strip, H.R., Pittsburgh	3.75-4.00	3.75-4.00	3.75-4.00	3.75-4.00	2.50
Strip, H.R., Chicago	3.50	3.50	3.50	3.50	2.50
Strip, C.R., Pittsburgh	4.65-5.35	4.65-5.35	4.65-5.35	4.65-5.35	3.20
Strip, C.R., Chicago	4.90	4.90	4.90	4.90	3.30
Strip, C.R., Detroit	4.85-5.60	4.85-5.60	4.85-5.60	4.35-5.60	3.335
Wire, Basic, Pittsburgh	4.85-5.10	4.85-5.10	4.85-5.10	4.85-5.10	3.425
Nails, Wire, Pittsburgh	5.90-6.20	5.90-6.20	5.90-6.20	5.90-6.20	4.125
Tin plate, box, Pittsburgh	$8.70	$8.70	$8.70	$8.70	$5.75

SEMIFINISHED

Billets, forging, Pitts. (NT)	$66.00	$66.00	$66.00	$66.00	$50.00
Wire rods, ½" & 5/16", Pitts.	4.10-30	4.10-30	4.10-30	4.10-30	2.675

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$53.00	$53.00	$31.00
Basic, Valley	52.00	52.00	52.00	52.00	30.00
Basic, del. Phila.	56.61	56.61	56.61	56.39	32.01
No. 2 Fdry., Pitts.	52.50	52.50	52.50	52.50	30.50
No. 2 Fdry., Chicago	52.50	52.50	52.50	52.50	30.50
No. 2 Fdry., Valley	52.50	52.50	52.50	52.50	30.50
No. 2 Fdry., Del. Phila.	57.11	57.11	57.11	56.89	32.51
No. 2 Fdry., Birm.	48.88	48.88	48.88	48.88	26.88
No. 2 Fdry. (Birm.) del. Cin.	55.49	55.49	55.49	55.58	31.75
Malleable, Valley	52.50	52.50	52.50	52.50	30.50
Malleable, Chicago	52.50	52.50	52.50	52.50	30.50
Charcoal, Lyles, Tenn.	66.00	66.00	66.00	66.00	37.50
Ferromanganese, Etna, Pa.	188.00	188.00	188.00	188.00	140.00*

* F.o.b. Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	$44.00	$44.00	$44.00	$46.50	$32.50
No. 1 Heavy Melt, E. Pa.	42.50	42.50	42.50	47.50	31.00
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	45.00	30.00
No. 1 Heavy Melt, Valley	44.00	44.00	44.00	46.25	32.50
No. 1 Heavy Melt, Cleve.	43.00	43.00	43.00	45.75	31.25
No. 1 Heavy Melt, Buffalo	43.00	43.00	43.00	44.88	32.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	67.00	34.75
No. 1 Cast, Chicago	49.00*	49.00*	49.00*	62.00	42.50

* F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn. Connlsvl.	$14.75	$14.75	$14.75	$14.75	$8.75-$9
Beehive, Fdry. Connlsvl.	17.50	17.50	17.50	17.50	9.75-10.00
Oven, Fdry., Chicago	23.00	23.00	23.00	21.00	13.10

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	24.50	19.50
Zinc, E. St. Louis	19.50	19.50	19.50	17.50	10.50
Lead, St. Louis	18.80	18.80	18.80	16.80	12.80-85
Tin, New York	103.00	103.00	103.00	176.00	70.00
Aluminum, del.	19.00	19.00	19.00	19.00	15.00
Antimony, Laredo, Tex.	50.00	50.00	50.00	32.00	25.25
Nickel, refinery, duty paid	56.50	56.50	56.50	50.50	35.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa., B2	$54.00	$54.50	$55.00	$55.50
Brooklyn, N.Y., del.	....	59.18	59.68	....
Newark, del.	56.87	57.37	57.87	58.37
Philadelphia, del.	56.61	57.11	57.61	58.11
Birmingham District				
Alabama City, Ala., R2	48.38	48.88	....	....
Birmingham, R2	48.38	48.88	....	....
Birmingham, S9	48.38	48.88	....	....
Woodward, Ala., W15	48.38	48.88	....	....
Cincinnati, del.	....	55.49	....	....
Buffalo District				
Buffalo, R2	52.00	52.50	53.00	....
Buffalo, H1	52.00	52.50	53.00	....
Tonawanda, N.Y., W12	52.00	52.50	53.00	....
No. Tonawanda, N.Y., T9	....	52.50	53.00	....
Boston, del.	62.11	62.61	63.11	....
Rochester, N.Y., del.	54.88	55.38	55.88	....
Syracuse, N.Y., del.	55.91	56.41	56.91	....
Chicago District				
Chicago, I-3	52.00	52.50	52.50	53.00
Gary, Ind., U5	52.00	....	52.50	....
Indiana Harbor, Ind., I-2	52.00	....	52.50	....
So. Chicago, Ill., W14	52.00	52.50	52.50	....
So. Chicago, Ill., Y1	52.00	52.50	52.50	....
So. Chicago, Ill., U5	52.00	....	52.50	53.00
Milwaukee, del.	54.06	54.56	54.56	55.06
Muskegon, Mich., del.	....	58.47	58.47	....
Cleveland District				
Cleveland, A7	52.00	52.50	52.50	53.00
Cleveland, R2	52.00	52.50	52.50	....
Akron, O., del. from Cleve.	54.61	55.11	55.11	55.61
Lorain, O., N3	52.00	....	....	53.00
Duluth, I-3	....	....	52.50	....
Erie, Pa., I-3	52.00	52.50	52.50	53.00
Everett, Mass., E1	....	57.50	58.00	....
Fontana, Calif., K1	58.00	58.50	....	....
Seattle, Tacoma, Wash., del.	....	60.66	....	....
Portland, Oreg., del.	....	60.66	....	....
Los Angeles, San Francisco, del.	60.16	60.66	....	....
Granite City, Ill., G4	53.90	54.40	54.90	....
St. Louis, del. (inc. tax)	54.66	55.16	55.66	....
Ironton, Utah, C11	52.00	52.50	....	....
Geneva, Utah, C11	52.00	52.50	....	....
Lone Star, Tex., L6	48.00	*48.50	48.50	....
Minnequa, Colo., C10	54.00	55.00	55.00	....
Pittsburgh District				
Neville Island, Pa., P6	....	52.50	52.50	53.00
Pitts., N.&S. sides, Ambridge, Aliquippa, del.	....	53.80	53.80	54.30
McKees Rocks, del.	....	53.54	53.54	54.04
Lawrenceville, Homestead, McKeesport, Monaca, del.	....	54.07	54.07	54.57
Verona, del.	....	54.57	54.57	55.07
Brackenridge, del.	....	54.82	54.82	55.32
Bessemer, Pa., U5	52.00	....	52.50	53.00
Clairton, Rankin, So. Duquesne, Pa., U5	52.00	....	....	....
McKeesport, Pa., N3	52.00	....	....	53.00
Monessen, Pa., P7	54.00	....	....	....
Sharpsville, Pa., S6	....	....	52.50	53.00
Steelton, Pa., B2	54.00	54.50	55.00	55.50
Swedeland, Pa., A3	56.00	56.50	57.00	57.50
Toledo, O., I-3	52.00	52.50	52.50	53.00
Cincinnati, del.	57.47	57.97	....	....
Troy, N.Y., R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard, O., Y1	52.00	52.50	52.50	....
Youngstown, Y1	52.00	52.50	52.50	....
Youngstown, U5	52.00	....	....	53.00
Mansfield, O., del.	56.65	57.15	57.15	57.65

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O., G2, J1	$62.50
Buffalo, H1	63.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for each 0.045% max. P.)

Niagara Falls, N.Y., F15	$88.00
Keokuk, Iowa, Openhearth & Fdry., frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., O.H. & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade, also for hard chilling iron Nos. 3 & 6)

Lyles, Tenn., T3	$66.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$57.00
Steelton, Pa., B2	60.00
Philadelphia, delivered	63.37
Troy, N.Y., R2	60.00

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Semifinished and Finished Steel Products

Mill prices quoted under GCFR as reported to STEEL, Jan. 17, 1952; cents per pound except as otherwise noted. Changes shown in Italics.
Code numbers following mill points indicate producing company; key on next two pages

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ... $79.00
Munhall,Pa. U5 ... 52.00

INGOTS, Alloy (NT)
Detroit R7 ... $54.00
Fontana,Calif. K1 ... 80.00
Houston,Tex. S5 ... 62.00
Midland,Pa. C18 ... 54.00
Munhall,Pa. U5 ... 54.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ... $56.00
Clairton,Pa. U5 ... 56.00
Ensley,Ala. T2 ... 56.00
Fairfield,Ala. T2 ... 56.00
Fontana,Calif. K1 ... 75.00
Gary,Ind. U5 ... 56.00
Johnstown,Pa. B2 ... 56.00
Lackawanna,N.Y., B2 ... 56.00
Munhall,Pa. U5 ... 56.00
So.Chicago,Ill. U5 ... 56.00
So.Duquesne,Pa. U5 ... 56.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ... $66.00
Buffalo R2 ... 66.00
Canton,O. R2 ... 66.00
Clairton,Pa. U5 ... 66.00
Cleveland R2 ... 66.00
Conshohocken,Pa. A3 .. 73.00
Detroit R7 ... 69.00
Ensley,Ala. T2 ... 66.00
Fairfield,Ala. T2 ... 66.00
Fontana,Calif. K1 ... 85.00
Gary,Ind. U5 ... 66.00
Geneva,Utah C11 ... 66.00
Houston,Tex. S5 ... 74.00
Johnstown,Pa. B2 ... 66.00
Lackawanna,N.Y. B2 .. 66.00
LosAngeles B3 ... 85.00
Munhall,Pa. U5 ... 66.00
Seattle B3 ... 85.00
So.Chicago R2,U5,W14 .. 66.00
So.Duquesne,Pa. U5 ... 66.00
So.SanFrancisco B3 ... 85.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ... $70.00
Buffalo R2 ... 70.00
Canton,O. R2 ... 70.00
Canton,O.(29) T7 ... 66.00
Conshohocken,Pa. A3 .. 77.00
Detroit R7 ... 73.00
Fontana,Calif. K1 ... 89.00
Gary,Ind. U5 ... 70.00
Houston,Tex. S5 ... 78.00
Ind.Harbor,Ind. Y1 ... 70.00
Johnstown,Pa. B2 ... 70.00
Lackawanna,N.Y. B2 .. 70.00
LosAngeles B3 ... 90.00
Massillon,O. R2 ... 70.00
Midland,Pa. C18 ... 70.00
Munhall,Pa. U5 ... 70.00
So.Chicago R2,U5,W14 .. 70.00
So.Duquesne,Pa. U5 ... 70.00
Struthers,O. Y1 ... 70.00
Warren,O. C17 ... 70.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 ... $82.00
Cleveland R2 ... 82.00
Fontana,Calif. K1 ... 103.00
Gary,Ind. U5 ... 82.00
Massillon,O. R2 ... 82.00
So.Chicago,Ill. R2 ... 82.00
So.Duquesne,Pa. U5 ... 82.00

SHEET BARS (NT)
Fontana,Calif. K1 ... $89.00

SKELP
Aliquippa,Pa. J5 ... $3.45
Munhall,Pa. U5 ... 3.35
Warren,O. R2 ... 3.35
Youngstown R2, U5 ... 3.35

WIRE RODS
Alton,Ill. L1 ... 4.40
AlabamaCity,Ala. R2 ... 4.10
Buffalo W12 ... 4.10
Cleveland A7 ... 4.10
Donora,Pa. A7 ... 4.10
Fairfield,Ala. T2 ... 4.10
Fontana,Calif. K1 ... 4.90
Houston,Tex. S5 ... 4.20
Johnstown,Pa. B2 ... 4.10
Joliet,Ill. A7 ... 4.10
Los Angeles B3 ... 4.90
Minnequa,Colo. C10 ... 4.35
Monessen,Pa. P7 ... 4.30
No.Tonawanda,N.Y. B11 .. 4.10
Pittsburg,Calif. C11 ... 4.75
Portsmouth,O. P12 ... 4.30
Roebling,N.J. R5 ... 4.20
So.Chicago,Ill. R2 ... 4.10
SparrowsPoint,Md. B2 .. 4.20
Sterling,Ill.(1), N15 ... 4.10
Struthers,O. Y1 ... 4.10
Torrance,Calif. C11 ... 4.90
Worcester,Mass. A7 ... 4.40

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ... 4.45
Lackawanna,N.Y. B2 ... 4.45
Munhall,Pa. U5 ... 4.45
So.Chicago,Ill. U5 ... 4.45

STRUCTURALS
Carbon Std. Stand. Shapes
AlabamaCity,Ala. R2 ... 3.60
Aliquippa,Pa. J5 ... 3.65
Bessemer,Ala. T2 ... 3.65
Bethlehem,Pa. B2 ... 3.70
Clairton,Pa. U5 ... 3.65
Fairfield,Ala. T2 ... 3.65
Fontana,Calif. K1 ... 4.25
Gary,Ind. U5 ... 3.65
Geneva,Utah C11 ... 3.65
Houston,Tex. S5 ... 4.05
Ind.Harbor,Ind. I-2 ... 3.65
Johnstown,Pa. B2 ... 3.70
KansasCity,Mo. S5 ... 4.25
Lackawanna,N.Y. B2 ... 3.70
LosAngeles B3 ... 4.25
Minnequa,Colo. C10 ... 4.10
Munhall,Pa. U5 ... 3.65
Niles,Calif.(22) P1 ... 4.85
Phoenixville,Pa. P4 ... 5.90
Portland,Oreg. O4 ... 4.50
Seattle B3 ... 4.30
So.Chicago,Ill. U5, W14 .. 3.65
So.SanFrancisco B3 ... 4.20
Torrance,Calif. C11 ... 4.25
Weirton,W.Va. W6 ... 3.90

Alloy Stand. Shapes
Clairton,Pa. U5 ... 4.35
Fontana,Calif. K1 ... 5.55
Munhall,Pa. U5 ... 4.35
So.Chicago,Ill. U5 ... 4.35

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ... 5.50
Bessemer,Ala. T2 ... 5.50
Bethlehem,Pa.(14) B2 ... 5.50
Clairton,Pa. U5 ... 5.50
Fairfield,Ala. T2 ... 5.50
Fontana,Calif. K1 ... 6.10
Gary,Ind. U5 ... 5.50
Geneva,Utah C11 ... 5.50
Ind.Harbor,Ind. I-2 ... 5.50
Ind.Harbor,Ind. Y-1 ... 6.00
Johnstown,Pa. B2 ... 5.50
Lackawanna,N.Y.(14) B2 .. 5.50
LosAngeles B3 ... 6.05
Munhall,Pa. U5 ... 5.50
Seattle B3 ... 6.10
So.Chicago,Ill. U5 ... 5.50
SoSanFrancisco B3 ... 6.00
Struthers,O. Y1 ... 6.00

Wide Flange
Bethlehem,Pa. B2 ... 3.70
Clairton,Pa. U5 ... 3.65
Fontana,Calif. K1 ... 4.65
Lackawanna,N.Y. B2 ... 3.70
Munhall,Pa. U5 ... 3.65
So.Chicago,Ill. U5 ... 3.65

H.S., L.A. Wide Flange
Bethlehem,Pa. G2 ... 5.50
Lackawanna,N.Y. B2 ... 5.50
Munhall,Pa. U5 ... 5.45
So.Chicago,Ill. U5 ... 5.45

BEARING PILES
Munhall,Pa. U5 ... 3.65
So.Chicago,Ill. U5 ... 3.65

PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 ... 5.65
Bessemer,Ala. T2 ... 5.65
Clairton,Pa. U5 ... 5.65
Cleveland J5, R2 ... 5.65
Conshohocken,Pa. A3 .. 5.90
Fairfield,Ala. T2 ... 5.65
Fontana,Calif.(30) K1 ... 6.25
Gary,Ind. U5 ... 5.65
Geneva,Utah C11 ... 5.65
Ind.Harbor,Ind. I-2 ... 5.65
Ind.Harbor,Ind. Y1 ... 6.15
Johnstown,Pa. B2 ... 5.65
Munhall,Pa. U5 ... 5.65
Pittsburgh J5 ... 5.65
Seattle B3 ... 6.55
Sharon,Pa. S3 ... 5.70
So.Chicago,Ill. U5 ... 5.65
SparrowsPoint,Md. B2 .. 5.65
Warren,O. R2 ... 5.65
Youngstown Y1 ... 6.15

PLATES, Open-Hearth Alloy
Claymont,Del. C22 ... 4.85
Coatesville,Pa. L7 ... 5.25
Conshohocken,Pa. A3 ... 5.05
Fontana,Calif. K1 ... 5.70
Gary,Ind. U5 ... 4.75
Johnstown,Pa. B2 ... 4.75
Munhall,Pa. U5 ... 4.75
Sharon,Pa. S3 ... 5.20
So.Chicago,Ill. U5 ... 4.75
SparrowsPoint,Md. B2 ... 4.75

FLOOR PLATES
Cleveland J5 ... 4.75
Conshohocken,Pa. A3 ... 4.75
Ind.Harbor,Ind. I-2 ... 4.75
Munhall,Pa. U5 ... 4.75
So.Chicago,Ill. U5 ... 4.75

PLATES, Ingot Iron
Ashland,c.l.(15) A10 ... 3.95
Ashland,l.c.l.(15) A10 ... 4.45
Cleveland,c.l. R2 ... 4.30
Warren,O.c.l. R2 ... 4.30

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ... 3.70
Aliquippa,Pa. J5 ... 3.70
Ashland,Ky. (15) A10 ... 3.70
Bessemer,Ala. T2 ... 3.70
Clairton,Pa. U5 ... 3.70
Claymont,Del. C22 ... 4.15
Cleveland J5, R2 ... 3.70
Coatesville,Pa. L7 ... 4.15
Conshohocken,Pa. A3 ... 4.15
Fairfield,Ala. T2 ... 3.70
Fontana,Calif. (30) K1 ... 4.30
Gary,Ind. U5 ... 3.70
Granite City,Ill. G4 ... 4.40
Geneva,Utah C11 ... 3.70
Harrisburg,Pa. C5 ... 6.30
Houston,Tex. S5 ... 4.10
Ind.Harbor,Ind. I-2, Y1 .. 3.70
Johnstown,Pa. B2 ... 3.70
Lackawanna,N.Y. B2 ... 3.70
Minnequa,Colo. C10 ... 4.50
Munhall,Pa. U5 ... 3.70
Pittsburgh J5 ... 3.70
Seattle B3 ... 4.60
Sharon,Pa. S3 ... 3.95
So.Chicago,Ill. U5, W14 .. 3.70
SparrowsPoint,Md. B2 .. 3.70
Steubenville,O. W10 ... 3.70
Warren,O. R2 ... 3.70
Weirton,W.Va. W6 ... 4.00
Youngstown R2, U5, Y1 .. 3.70

PLATES, Carbon A.R.
Fontana,Calif. K1 ... 5.45
Geneva,Utah C11 ... 4.85

PLATES, Wrought Iron
Economy,Pa. B14 ... 8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ... 3.70
Aliquippa,Pa. J5 ... 3.70
Alton,Ill. L1 ... 4.15
Atlanta,Ga. A11 ... 4.25
Bessemer,Ala. T2 ... 3.70
Buffalo R2 ... 3.70
Canton,O. R2 ... 3.70
Clairton,Pa. U5 ... 3.70
Cleveland R2 ... 3.70
Detroit R7 ... 3.85
Emeryville,Calif. J7 ... 4.45
Fairfield,Ala. T2 ... 3.70
Fontana,Calif. K1 ... 4.40
Gary,Ind. U5 ... 3.70
Houston,Tex. S5 ... 4.10
Ind.Harbor,Ind. I-2,Y1 .. 3.70
Johnstown,Pa. B2 ... 3.70
KansasCity,Mo. S5 ... 4.30
Lackawanna,N.Y. B2 ... 3.70
LosAngeles B3 ... 4.40
Milton,Pa. B6 ... 4.20
Minnequa,Colo. C10 ... 4.15
Niles,Calif. P1 ... 5.05
N.Tonawanda,N.Y. B11 .. 3.70
Pittsburg,Calif. C11 ... 4.40
Pittsburgh J5 ... 3.70
Portland,Oreg. O4 ... 4.65
Seattle B3 ... 4.45
Struthers,O. Y1 ... 3.70
Torrance,Calif. C11 ... 4.40
Weirton,W.Va. W6 ... 3.85
So.Chicago R2, U5, W14 .. 3.70
So.Duquesne,Pa. U5 ... 3.70
So.SanFran.,Ca. B3 ... 4.45
Youngstown R2, U5 ... 3.70

BAR SIZE ANGLES, S. Shapes
Aliquippa,Pa. J5 ... 3.70
Atlanta A11 ... 4.25
Johnstown,Pa. B2 ... 3.70
Lackawanna,N.Y. B2 ... 3.70
Niles,Calif. P1 ... 5.05
Portland,Oreg. O4 ... 4.65
SanFrancisco S7 ... 4.85

BAR SIZE ANGLES, H.R. CARBON
Bethlehem,Pa. B2 ... 3.80

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ... 4.30
Buffalo R2 ... 4.30
Canton,O. R2 ... 4.30
Canton,O.(29) T7 ... 3.95
Clairton,Pa. U5 ... 4.30
Detroit R7 ... 4.45
Ecorse,Mich. G5 ... 4.65
Fontana,Calif. K1 ... 5.35
Gary,Ind. U5 ... 4.30
Houston,Tex. S5 ... 4.70
Ind.Harbor,Ind. I-2, Y1 .. 4.30
Johnstown,Pa. B2 ... 4.30
KansasCity,Mo. S5 ... 4.90
Lackawanna,N.Y. B2 ... 4.30
LosAngeles B3 ... 5.35
Massillon,O. R2 ... 4.30
Midland,Pa. C18 ... 4.30
So.Chicago R2, U5, W14 .. 4.30
So.Duquesne,Pa. U5 ... 4.30
Struthers,O. Y1 ... 4.30
Warren,O. C17 ... 4.30
Youngstown U5 ... 4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 ... 4.55
Gary,Ind. U5 ... 4.55
Youngstown U5 ... 4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ... 5.55
Bessemer,Ala. T2 ... 5.55
Bethlehem,Pa. B2 ... 5.55
Clairton,Pa. U5 ... 5.55
Cleveland R2 ... 5.55
Fairfield,Ala. T2 ... 5.55
Fontana,Calif. K1 ... 6.60
Gary,Ind. U5 ... 5.55
Ind.Harbor,Ind. I-2 ... 5.55
Indiana,Harbor,Ind. Y1 .. 6.05
Johnstown,Pa. B2 ... 5.55
Lackawanna,N.Y. B2 ... 5.55
LosAngeles B3 ... 6.25
Pittsburgh J5 ... 5.55
Seattle B3 ... 6.30
So.Duquesne,Pa. U5 ... 5.55
So.SanFrancisco B3 ... 6.30
Struthers,O. Y1 ... 6.05
Youngstown U5 ... 5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ... 4.55
BeaverFalls,Pa. M12,R2 .. 4.55
Buffalo B5 ... 4.60
Camden,N.J. P13 ... 5.00
Carnegie,Pa. C12 ... 4.55
Chicago W18 ... 4.55
Cleveland A7, C20 ... 4.55
Detroit P17 ... 4.70
Donora,Pa. A7 ... 4.55
Elyria,O. W8 ... 4.55
FranklinPark,Ill. N5 ... 4.55
Gary,Ind. R2 ... 4.55
GreenBay,Wis. F7 ... 4.55
Hammond,Ind. L2, M13 .. 4.55
Hartford,Conn. R2 ... 5.10
Harvey,Ill. B5 ... 4.55
LosAngeles R2 ... 6.00
Mansfield,Mass. B5 ... 5.10
Massillon,O. R2, R8 ... 4.55
Monaca,Pa. B17 ... 4.55
Newark,N.J. W18 ... 5.00
Plymouth,Mich. P5 ... 4.80
Pittsburgh J5 ... 4.55
Putnam,Conn. W18 ... 5.10
Readville,Mass. C14 ... 5.10
St.Louis,Mo. M5 ... 4.95
So.Chicago,Ill. W14 ... 4.55
SpringCity,Pa. (5) K3 .. 5.00
Struthers,O. Y1 ... 4.55
Waukegan,Ill. A7 ... 4.55
Youngstown F3, Y1 ... 4.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ... 5.40
BeaverFalls,Pa. M12 ... 5.40
Bethlehem,Pa. B2 ... 5.40
Buffalo B5 ... 5.45
Camden,N.J. P13 ... 5.80
Canton,O. R2 ... 5.40
Canton,O.(29) T7 ... 4.90
Carnegie,Pa. C12 ... 5.40
Chicago W18 ... 5.40
Cleveland A7 ... 5.45
Cleveland C20 ... 5.40
Detroit P17 ... 5.55
Donora,Pa. A7 ... 5.45
Elyria,O. W8 ... 5.40
Gary,Ind. R2 ... 5.40
Hammond,Ind. L2, M13 .. 5.40
Hartford,Conn. R2 ... 5.85
Harvey,Ill. B5 ... 5.40
Lackawanna,N.Y. B2 ... 5.40
Mansfield,Mass. B5 ... 5.85
Massillon,O. R2, R8 ... 5.40
Midland,Pa. C18 ... 5.40
Monaca,Pa. S17 ... 5.40
Newark,N.J. W18 ... 5.75
Plymouth,Mich. P5 ... 5.60
So.Chicago,Ill. R2, W14 .. 5.40
Struthers,O. Y1 ... 5.40
Warren,O. C17 ... 5.40
Waukegan,Ill. A7 ... 5.45
Worcester,Mass. A7 ... 5.75
Youngstown F3, Y1 ... 5.40

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ... 4.75
ChicagoHts.(3,4) I-2 ... 4.75
Franklin,Pa.(3,4) F3 ... 4.75
FortWorth,Tex.(26) T4 ... 4.85
Huntingtn,W.Va. W7 ... 5.50
Marion,O.(3) P11 ... 4.75
Moline,Ill.(3) R2 ... 3.80
Tonawanda(3,4) B12 ... 4.75
Williamsport(3) S19 ... 5.00
Williamsport(4) S19 ... 5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.00
Dover,(Eng.Bolt) U1 ... 13.50
Dover,(Wrgh.Iron) U1 12.25
Economy,Pa.(S.R.) B14 9.60
Economy,Pa.(D.R.)B14 11.90
Economy,(Staybolt)B14 12.20
McK.Rks.(Staybolt)L5 14.50
McK.Rks.(S.R.) L5 ... 9.60
McK.Rks.(D.R.) L5 ... 12.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ... 3.70
Atlanta A11 ... 4.25
Buffalo R2 ... 3.70
Cleveland R2 ... 3.70
Emeryville,Calif. J7 ... 4.45
Fairfield,Ala. T2 ... 3.70
Fontana,Calif. K1 ... 4.40
Gary,Ind. U5 ... 3.70
Houston,Tex. S5 ... 4.10
Ind.Harbor,Ind. I-2, Y1 3.70
Johnstown,Pa. B2 ... 3.70
KansasCity,Mo. S5 ... 4.30
Lackawanna,N.Y. B2 ... 3.70
LosAngeles B3 ... 4.00
Milton,Pa. B6 ... 4.20
Minnequa,Colo. C10 ... 4.20
Niles,Calif. P1 ... 5.05
Pittsburg,Calif. C11 ... 4.40
Pittsburgh J5 ... 3.70
Portland,Oreg. O4 ... 4.65
SandSprings,Okla. S5 ... 4.60
Seattle B3, N14 ... 4.45
So.Chicago,Ill. R2 ... 3.70
So.Duquesne,Pa. U5 ... 3.70
So.SanFrancisco B3 ... 4.45
SparrowsPoint,Md. B2 ... 3.70
Struthers,O. Y1 ... 3.70
Torrance,Calif. C11 ... 4.40
Youngstown R2, U5 ... 3.70

BARS, Reinforcing
(Fabricated; to Consumers)
Huntington,W.Va. W7 ... 5.50
Johnstown, ¼-1" B2 ... 4.75
LosAngeles B3 ... 5.45
Marion,O. P11 ... 5.00
Seattle B3, N14 ... 5.55
So.SanFrancisco B3 ... 5.45
SparrowsPt., ¼-1" B2 ... 4.75
Williamsport,Pa. S19 ... 5.10

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ... 3.60
Ashland,Ky.(8) A10 ... 3.60
Butler,Pa. A10 ... 3.60
Cleveland J5, R2 ... 3.60
Conshohocken,Pa. A3 ... 4.00
Detroit M1 ... 4.40
Ecorse,Mich.(8) G5 ... 3.80
Fairfield,Ala. T2 ... 3.60
Fontana,Calif. K1 ... 4.55
Gary,Ind. U5 ... 3.60
Geneva,Utah C11 ... 3.70
GraniteCity,Ill. G4 ... 4.30
Ind.Harbor,Ind. I-2, Y1 3.60
Irvin,Pa. U5 ... 3.60
Lackawanna,N.Y. B2 ... 3.60
Munhall,Pa. U5 ... 3.60
Niles,O. N12 ... 5.25
Pittsburg,Calif. C11 ... 4.30
Pittsburgh J5 ... 3.60
Sharon,Pa. S3 ... 4.00
So.Chicago,Ill. W14 ... 3.60
SparrowsPoint,Md. B2 ... 3.60
Steubenville,O. W10 ... 3.60
Torrance,Calif. C11 ... 4.30
Warren,O. R2 ... 3.60
Weirton,W.Va. W6 ... 3.60
WestLeechburg,Pa. A4 .. 3.75
Youngstown U5, Y1 ... 3.60

SHEETS, H.R., (19 gage)
AlabamaCity,Ala. R2 ... 4.75
Butler,Pa. R1 ... 5.65
Ind.Harbor,Ind. I-2 ... 5.40
Mansfield,O. E6 ... 5.65
Niles,O. N12 ... 5.75
Torrance,Calif. C11 ... 5.40

SHEETS, H.R., (14-ga., heavier)
High-Strength Low-Alloy
Cleveland J5, R2 ... 5.40
Conshohocken,Pa. A3 .. 5.65
Ecorse,Mich. G5 ... 5.95
Fairfield,Ala. T2 ... 5.40
Fontana,Calif. K1 ... 6.35
Gary,Ind. U5 ... 5.40
Ind.Harbor,Ind. I-2 ... 5.40
Indiana,Harbor,Ind. Y1 .. 5.90
Irvin,Pa. U5 ... 5.40
Lackawanna(35) B2 ... 5.40
Pittsburgh J5 ... 5.40
Sharon,Pa. S3 ... 5.40
So.Chicago,Ill. U5 ... 5.40
SparrowsPoint(36) B2 .. 5.40
Warren,O. R2 ... 5.40
Weirton,W.Va. W6 ... 5.75
Youngstown U5 ... 5.40
Youngstown Y1 ... 5.90

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 ... 6.55
Ecorse,Mich. G5 ... 7.10
Fontana,Calif. K1 ... 7.50
Gary,Ind. U5 ... 6.55
Indiana,Harbor,Ind. Y1 .. 7.06
Indiana,Harbor,Ind. I-2.. 6.55
Irvin,Pa. U5 ... 6.55
Lackawanna(37) B2 ... 6.55
Pittsburgh J5 ... 6.55
SparrowsPoint(38) B2 .. 6.55
Warren,O. R2 ... 6.55
Weirton,W.Va. W6 ... 6.90
Youngstown Y1 ... 7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A16	4.25
Cleveland,O. R2	4.25
Conshohocken,Pa. G6	4.25
Fairfield,Ala. T2	4.25
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	5.25
Gary,Ind. U5	4.25
GraniteCity,Ill. G4	5.05
Ind.Harbor,Ind. I-2, Y1	4.25
Irvin,Pa. U5	4.25
Lackawanna,N.Y. B2	4.25
Middletown,O. A10	4.25
Pittsburg,Calif. C11	5.20
Pittsburgh,Pa.	4.25
SparrowsPoint,Md. B2	4.25
Steubenville,O. W10	4.25
Warren,O. R2	4.25
Weirton,W.Va. W6	4.25
Youngstown,Y1	4.25

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.80
Ashland,Ky.(8) A10	4.80
Canton,O. R2	4.80
Dover,O. R1	5.50
Fairfield,Ala. T2	4.80
Gary,Ind. U5	4.80
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	4.80
Irvin,Pa. U5	4.80
Kokomo,Ind.(12) C16	5.20
MartinsFerry,O. W10	4.80
Niles,O. N12	4.80
Pittsburg,Calif. C11	5.55
SparrowsPoint,Md. B2	4.80
Steubenville,O. W10	4.80
Torrance,Calif. C11	5.55
Weirton,W.Va. W6	4.80

SHEETS, Galvanized No. 10, High Strength Low-Alloy

Irvin,Pa. U5	7.20
SparrowsPoint(3y) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	5.35
Irvin,Pa. U5	5.35
Kokomo,Ind.(13) C16	5.75
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.05
Middletown,O. A10	5.05

SHEETS, Electro Galvanized

Cleveland,R2 (28)	5.65
Niles,O. R2 (28)	5.65
Weirton,W.Va. W6	5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.70

SHEETS, Drum Body

Pittsburg,Calif. C11	4.20
Torrance,Calif. C11	4.20

SHEETS, Well Casing

Fontana,Calif. K1	5.10

BLUED Stock, 29 ga

Yorkville,O. W10	6.80
Follansbee,W.Va.(22) F4	6.65

TIN PLATE, Electrolytic (Base Box)

	0.25-lb	0.50 lb	0.75lb
Aliquippa,Pa. J5	$7.15	$7.40	$7.90
Fairfield,Ala. T2	7.25	7.50	7.90
Gary,Ind. U5	7.15	7.40	7.80
GraniteCity,Ill. G4	7.25	7.60	8.00
Ind.Harbor,Ind. I-2, Y1	7.15	7.40	7.80
Irvin,Pa. U5	7.15	7.40	7.80
Niles,O. R2	7.15	7.40	7.80
Pittsburg,Calif. C11	7.90	8.15	8.55
SparrowsPoint,Md. B2	7.25	7.50	7.90
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R (22 Ga.) COILS (Cut Lengths 1/2c lower)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W10 (cut lengths)			7.25	8.50	9.30
Brackenridge,Pa. A4			7.75	9.00	9.80
GraniteCity,Ill.(4 (cut lengths)			7.95	9.20	...
Ind.Harbor,Ind. I-2	6.95	7.25	(34)	...	...
Mansfield,O. E6 (cut lengths)	7.10	7.25	7.75	9.00	9.80
Niles,O. N12 (cut lengths)		6.75	7.25	...	...
Vandergrift,Pa. U5		7.25	7.75	9.00	9.80
Warren,O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville,O. A10		7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths 1/2c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	...	...	...
Vandergrift,Pa. U5	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	...	...	...
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

Butler,Pa. A10 (C.R.)	7.100	7.90	7.80	7.73
Vandergrift,Pa. U5	12.90	13.75	14.75	15.25

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.65
Fairmead,R2	4.65
Gary,Ind. U5	4.65
GraniteCity,Ill. G4	5.35
Ind.Harbor,Ind. I-2	4.65
Irvin,Pa. U5	4.65
Middletown,O. A10	4.65
Youngstown,Y1	4.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.20
Fairfield,Ala. T2	6.30
Gary,Ind. U5	6.25
GraniteCity,Ill. G4	6.45
Ind.Harbor,Ind. I-2, Y1	6.25
Irvin,Pa. U5	6.25
Niles,O. R2	6.25
Pittsburg,Calif. C11	7.00
SparrowsPoint,Md. B2	6.35
Warren,O. R2	6.25
Weirton,W.Va. W6	6.25
Yorkville,O. W10	6.25

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	5.85
Gary,Ind. U5	5.85
GraniteCity,Ill. G4	6.05
Ind.Harbor,Ind. Y1	5.20
Irvin,Pa. U5	5.85
Yorkville,O. W10	6.15

SHEETS, Culvert No. 16

	Cu	Cu Alloy	Pa
Ashland,Ky. A10	5.60	...	...
Canton,O. R2	5.65	6.20	
Fairfield,Ala. T2	5.60	5.85	
Gary,Ind. U5	5.60	5.85	
IndianaHarbor,I-2	5.60	5.85	
Irvin,Pa. U5	5.60	5.85	
Kokomo,Ind. C16	6.25	...	
MartinsFy,O. W10	5.60	5.85	
Pittsburg,Calif. C11	6.35	...	
SparrowsPt. B2	5.60	...	
Torrance,Cal. C11	6.35	...	

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	5.85
Fairfield,Ala. T2	5.85

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	3.85
Cleveland,R2	4.20
Ind.Harbor,Ind. I-2	3.85
Warren,O. R2	4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland,R2	4.95
Middletown,O. A10	4.85
Warren,O. R2	4.95

SHEETS, Galvanized Ingot Iron No. 10 Flat

Ashland,Ky.(8) A10	5.05
Canton,O. R2	5.55

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.30
Middletown,O. A10	5.30

SHEETS, ALUMINIZED

Butler,Pa. A10	8.15

TINPLATE, American 1.25 Coke (Base Box)

	lb	lb
Aliquippa,Pa. J5	$6.45	$6.70
Fairfield,Ala. T2	6.50	6.66
Gary,Ind. U5	6.45	6.70
Ind.Har. I-2, Y1	6.45	6.70
Irvin,Pa. U5	6.45	6.70
Pitts.Cal. C11	6.20	6.45
Sp.Pt. Md. B2	6.50	6.75
Warren,O. R2	6.45	6.70
Weirton,W.Va. W6	6.45	6.70
Yorkville,O. W10	6.45	6.70

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.60
Gary,Ind. U5	7.50
Irvin,Pa. U5	7.50
SparrowsPoint,Md. B2	7.60
Yorkville,O. W10	7.50

SHEETS, LT Coated Ternes, 8 lb

Yorkville,O. W10	$8.60

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.50
Yorkville,O. W10	9.50

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10	5.30
Gary,Ind. U5	5.20
Mansfield,O. E6	6.05
Middletown,O. A10	5.20
Niles,O. N12	6.00
Weirton,W.Va. W6	5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.60

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.50

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.30
Conshohocken,Pa. A2	5.55
Koppers Mich. G5	5.95
Fairfield,Ala. T2	5.30
Fontana,Calif. K1	6.20
Gary,Ind. U5	5.30
Ind.Harb.,Ind. I-2	5.30
IndianaHarbor,Ind. Y1	5.50
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	6.05
Seattle B3	5.30
Sharon,Pa. S3	5.40
So.SanFrancisco(25) B3	6.05
SparrowsPoint,Md. B2	4.95
Warren,O. R2	5.30
Weirton,W.Va. W6	5.75
Youngstown Y1	5.50
Youngstown U5	5.30

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland,J5	6.70
Cleveland,A7	6.55
Dover,O. G6	7.30
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.55
Weirton,W.Va. W6	7.20
Youngstown Y1	7.05

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.50
Alton,Ill. L3	5.90
Ashland,Ky.(8) A10	5.50
Atlanta A11	6.05
Bessemer,Ala. T2	5.50
Bridgeport,Conn.(20) S15	6.90
Buffalo(27) R2	5.50
Butler,Pa. A10	5.50
Carnegie,Pa. S15	6.00
Conshohocken,Pa. A2	5.90
Detroit M1	6.40
Koppers Mich. G5	5.80
Fairfield,Ala. T2	5.50
Fontana,Calif. K1	6.15
Gary,Ind. U5	5.50
Houston,Tex. S5	5.90
Ind. Harbor,Ind. I-2, Y1	5.50
Johnstown,Pa.(25) B2	5.50
KansasCity,Mo.(8) S5	6.10
Lackawanna,N.Y.(22) B2	5.50
LosAngeles B3	6.25
Mansfield,Pa. B6	6.00
Minnequa,Colo. C10	6.55
NewBritain(10) S15	6.00
No.Tonawanda,N.Y. B11	5.50
Pittsburg,Calif. C11	6.25
Riverdale,Ill. A1	5.50
SanFrancisco S7	6.60
Seattle B3, N14	6.50
Sharon,Pa. S2	6.00
So.Chicago,Ill. W14	5.50
So.SanFrancisco B3	6.25
SparrowsPoint,Md. B2	5.50
Torrance,Calif. C11	6.25
Warren,O. R2	5.50
Weirton,W.Va. W6	5.50
WestLeechburg,Pa. A4	5.75
Youngstown U5, Y1	5.50

STRIP, Hot-Rolled Alloy

Bridgport,Conn.(10) S15	5.45
Carnegie,Pa. S15	5.85
Fontana,Calif. K1	6.70
Gary,Ind. U5	5.90
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Beres,O. C7		6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
Bristol,Conn. W1			7.70	9.65	...
Carnegie,Pa. S15		6.80	7.40	9.35	11.65
Cleveland A7	6.65	6.65	7.40	9.35	11.65
Dearborn,Mich. D3	5.60	6.65	7.65	...	...
Detroit D2	5.60	6.65	7.25	...	...
Dover,O. G6	5.50	6.80	7.40	9.35	11.65
FranklinPark,Ill. T6	5.90	6.90	7.55	9.50	11.80
Harrison,N.J. C18			7.70	9.65	11.95
Mattapan,Mass. T6	5.50	6.75	7.70	9.65	11.95
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	...
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn. D2	5.45	6.75	7.35	...	...
NewYork W3		7.10	7.70	9.65	11.95
Pawtucket,R.I. N8: Cleve.orPitts.Base		6.80	7.40	9.35	11.65
Worcester,Mass.Base	5.65	7.10	7.70	9.65	11.95
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J. R5		7.10	7.70	9.65	11.95
Wallingford,Conn. W2	5.85	6.75	7.35	9.30	11.60
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11.65
Worcester,Mass. A7	5.95	6.75	7.70	9.65	11.95
Worcester,Mass. T6	5.50	6.75	7.70	9.65	11.95
Youngstown C8		6.80	7.40	9.35	11.65

Spring Steel (Tempered)

Trenton,N.J. R5	...	...	10.30 12.50	15.35
Harrison,N.J. C18	...	...	10.30 12.50	15.35
NewYork W3	...	...	10.30 12.50	15.35

STRIP, Cold-Rolled Carbon

Anderson,Ind.(60) G4	5.50
Beres,O. C7	6.90
Bridgeport,Conn.(20) S15	5.25
Butler,Pa. A10	6.65
Cleveland A7, J5	6.65
Dearborn,Mich. D3	5.60
Detroit D2	5.65
Detroit M1	5.65
Dover,O.(60) G4	5.50
Koppers Mich. G5	6.65
Follansbee,W.Va. F4	5.35
Fontana,Calif. K2	6.20
FranklinPark,Ill.(60) T6	6.90
Ind.Harbor,Ind. I-2	6.90
Lackawanna,N.Y. B2	6.65
LosAngeles C1	6.40
Mattapan,Mass. T6	5.50
Middletown,O. A10	6.65
NewBritain(10) S15	5.25
NewCastle,Pa. B4	5.25
NewCastle,Pa.(60) E5	5.25
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.15
Pawtucket,R.I. R2	6.90
Pawtucket,R.I.(21) N8	5.65
Riverdale,Ill.(60) A1	6.90
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.25
SparrowsPoint,Md. B2	6.65
Torrance,Calif. C11	6.25
Trenton,N.J. R5	6.90
Wallingford,Conn. W2	5.85
Warren,O.(60) T9	5.25
Warren,O. R2	6.65
Weirton,W.Va. W6	6.65
Youngstown C8 (60)	5.25
Youngstown Y1	6.65

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.25
Weirton,W.Va. W6	6.65
Youngstown C8	5.25

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.25
Weirton,W.Va. W6	6.65
Youngstown C8	5.25

Key to Producers

A1	Acme Steel Co.
A3	Alan Wood Steel Co.
A4	Allegheny Ludlum Steel
A7	American Steel & Wire
A8	Anchor Drawn Steel Co.
A9	Angell Nail & Chaplet
A10	Armco Steel Corp.
A11	Atlantic Steel Co.
A12	American Cladmetals Co.
B1	Babcock & Wilcox Co.
B2	Bethlehem Steel Co.
B3	Beth. Pac. Coast Steel
B4	Blair Strip Steel Co
B5	Bliss & Laughlin Inc.
B6	Bonardi Steel Corp.
B8	Braeburn Alloy Steel
B11	Buffalo Bolt Co.
B12	Buffalo Steel Co.
B14	A. M. Byers Co.
C1	Calstrip Steel Corp.
C2	Calumet Steel Div. Borg-Warner Corp.
C4	Carpenter Steel Co.
C5	Central Iron & Steel Div. Barium Steel Corp
C7	Cleve. Cold Rolling Mills
C8	Cold Metal Products Co.
C9	Colonial Steel Co.
C10	Colorado Fuel & Iron
C11	Columbia-Geneva Steel
C12	Columbia Steel & Shaft
C13	Columbia Tool Steel Co.
C14	Compressed Steel Shaft
C16	Continental Steel Corp.
C17	Copperweld Steel Co.
C18	Crucible Steel Co.
C19	Cumberland Steel Co.
C20	Cuyahoga Steel & Wire
C22	Claymont Steel Corp.
D2	Detroit Steel Corp.
D3	Detroit Tube & Steel
D4	Disston & Sons, Henry
D6	Driver Harris Co.
D7	Dickson Weatherproof Nail Co.
E1	Eastern Gas&Fuel Assoc.
E2	Eastern Stainless Steel
E4	Electro Metallurgical Co.
E5	Elliott Bros. Steel Co.
E6	Empire Steel Corp.
F2	Firth Sterling Steel
F3	Fitzsimons Steel Co.
F4	Follansbee Steel Corp.
F5	Franklin Steel Div. Borg-Warner Corp.
F8	Fretz-Moon Tube Co.
F7	Ft. Howard Steel & Wire
G2	Globe Iron Co.
G3	Globe Steel Tubes Co.
G4	Granite City Steel Co.
G5	Great Lakes Steel Corp
G6	Greer Steel Co.
H1	Hanna Furnace Corp.
I-1	Igoe Bros. Inc.
I-2	Inland Steel Co.
I-3	Interlake Iron Corp.
I-4	Ingersoll Steel Div. Borg-Warner Corp.
J1	Jackson Iron & Steel Co.
J3	Jessop Steel Co.
J4	Johnson Steel & Wire Co.
J5	Jones & Laughlin Steel
J6	Joslyn Mfg. & Supply
J7	Judson Steel Corp.
J8	Jersey Shore Steel Co.
K1	Kaiser Steel Corp.
K2	Keokuk Electro Metals
K3	Keystone Drawn Steel
K4	Keystone Steel & Wire
L1	Laclede Steel Co.
L2	LaSalle Steel Co.
L3	Latrobe Electric Steel
L5	Lockhart Iron & Steel
L6	Lone Star Steel Co.
L7	Lukens Steel Co.

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn. (10)	B15 10.75
Carnegie,Pa.	S13 ....10.60
Cleveland	A7 ....10.00
Dover, O.	G6 ....10.50
Fontana,Calif.	K1 ....11.65
Harrison,N.J.	C18 ....10.60
Midland,Pa.	C18 ....10.60
NewBritn,Conn. (10)	B15 10.75
Pawtucket,R.I. (11)	N8..10.75
Pawtucket,R.I. (12)	N8..11.05
Sharon,Pa.	S3 ....10.60
Worcester,Mass.	A7 ....10.30
Youngstown	C8 ....10.60

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky. (8)	A10....3.75
Warren,O.	R2 ....4.10

STRIP, Cold-Rolled Ingot Iron

Warren,O.	R2 ....5.25

TIGHT COOPERAGE HOOP

Atlanta	A11 ....4.05
Riverdale,Ill.	A1 ....3.90
Sharon,Pa.	S3 ....4.15
Youngstown	U5 ....3.75

WIRE, Merchant Quality

	(6 to 8 gage)	An'ld	Galv.
AlabamaCity	R2	5.70	5.95
Aliquippa	J5	5.70	6.15
Atlanta	A11	5.95	6.40
Bartonville(19)	K4	5.70	6.15
Buffalo	W12	4.85	...
Cleveland	A7	5.70	6.15
Crawfordsville	M8	5.95	6.40
Donora,Pa.	A7 ..	5.70	6.15
Duluth,Minn.	A7 ..	5.70	6.15
Fairfield	T2	5.70	6.15
Houston,Tex.	B5	5.10	6.15
Johnstown	B2	5.70	6.15
Joliet,Ill.	A7	5.70	6.15
KansasCy,Mo.	S5 ..	6.30	6.75
Kokomo	C16	5.80	6.05
LosAngeles	B3	6.65	...
Minnequa	C10	5.95	6.45
Monessen	P7	5.95	6.40
Palmer	W12	5.15	...
Pitts.,Calif.	C11..	6.65	6.80
Prtsmth.(18)	P12 ..	6.10	6.60
Rankin	A7	5.70	6.15
So.Chicago	R2 ..	5.70	5.95
So.S.Fran.	C10 ..	6.65	7.10
SparrowsPt.	B2 ..	5.80	6.25
Sterling,Ill. (1)	N15	5.70	6.15
Struthers,O.	Y1 ..	5.70	6.15
Torrance,Cal.	C11	6.65	...
Worcester	A7	6.00	6.45

ROPE WIRE

	(A)	(B)
Alton,Ill.	L1	8.65	8.90
Bartonville,Ill.	K4	8.55	8.80
Buffalo	W12	8.55	8.80
Fostoria,O.	S1	8.85	9.10
Johnstown,Pa.	B2	8.55	8.80
Monessen,Pa.	P16	8.55	8.80
Monessen,Pa.	P7 ..	8.80	9.05
Palmer,Mass.	W12 ..	8.85	9.10
Portsmouth,O.	P12	8.55	8.80
Roebling,N.J.	R5 ..	8.85	9.10
SparrowsPt.	B2 ..	8.55	8.80
Struthers,O.	Y1 ..	8.55	8.80
Worcester	J4, T6	8.85	9.10

(A) Plow and Mild Plow.
(B) Improved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala.	R2....4.85
Aliquippa,Pa.	J5 ....4.85
Atlanta	A11 ....5.10
Alton,Ill.	L1 ....5.05
Bartonville,Ill.(1)	K4 ....4.85
Buffalo	W12 ....4.85
Chicago	W13 ....5.10
Cleveland	A7, C20 ....4.85
Crawfordsville,Ind.	M8 ....5.10
Donora,Pa.	A7 ....4.85
Duluth,Minn.	A7 ....4.85
Fairfield,Ala.	T2 ....4.85
Fostoria,O.(24)	S1 ....5.35
Houston	B5 ....5.25
Johnstown,Pa.	B2 ....4.85
Joliet,Ill.	A7 ....4.85
KansasCity,Mo.	S5 ....5.45
Kokomo,Ind.	C16 ....4.95
LosAngeles	B3 ....5.80
Minnequa,Colo.	C10 ....5.10
Monessen,Pa.	P7 ....5.10
Newark, 6-8 ga.	I-1 ....5.50
No.Tonawanda	B11 ....4.85
Palmer,Mass.	W12 ....5.15
Pittsburg,Calif.	C11 ....5.80
Portsmouth,O.	P12 ....5.25
Rankin,Pa.	A7 ....4.85
So.Chicago,Ill.	R2 ....4.85
So.SanFrancisco	C10....5.80
SparrowsPoint,Md.	B2..4.95
Sterling,Ill.(1)	N15 ....4.85
Struthers,O.	Y1 ....4.85
Torrance,Calif.	C11 ....5.80
Waukegan,Ill.	A7 ....4.85
Worcester,Mass.	A7, T6 5.15

WIRE, Cold-Rolled Flat

Anderson,Ind.	G6 ....6.20
Buffalo	W12 ....6.35
Cleveland	A7 ....5.85
Crawfordsville,Ind.	M8..6.20
Detroit	D2 ....6.20
Hanover,O.	S5 ....6.10
Fostoria,O.	S1 ....6.00
Kokomo,Ind.	C16 ....5.70
FranklinPark,Ill.	T6 ....6.20
Massillon,O.	R8 ....5.85
Monessen,Pa.	P16 ....5.85
Monessen,Pa.	P7 ....6.10
NewHaven,Conn.	D2 ....6.50
Pawtucket,R.I.(12)	N8..6.85
Trenton,N.J.	R5 ....6.15
Worcester,Mass.	A7 ....6.15
Worcester,Mass.	T6 ....6.50
Worcester,Mass.	W12 ...6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill.	K4 ....8.50
Monessen,Pa.	P16 ....8.50
Roebling,N.J.	R5 ....8.80
SparrowsPoint,Md.	B2...8.60
Johnstown,Pa.	B2 ....8.50

WIRE, Tire Bead

Bartonville,Ill.(1)	K4 ..10.90
Monessen,Pa.	P16 ....11.40
Roebling,N.J.	R5 ....11.55

WIRE (16 gage)	**Stone**	**An'ld**	**Galv.**
Aliquippa	J5	10.15	12.15
Bartonville(1)	K4	10.25	11.95
Cleveland	A7	10.25	12.15
Crawfrdsville	M8	10.30	12.00
Fostoria,O.	S1	10.40	13.00
Johnstown	B2	10.25	12.15
Kokomo	C16	10.25	11.95
Minnequa	C10	10.40	12.40
Palmer,Mass.	W12	10.25	12.15
Pitts.Cal.	C11	10.60	12.50
Prtsmth.(18)	P12	10.55	12.30
SparrowsPt.	B2	10.35	12.25
Waukegan	A7	10.25	12.15

WIRE, MB Spring, High Carbon

Aliquippa,Pa.	J5 ....6.25
Alton,Ill.	L1 ....6.45
Bartonville,Ill.(1)	K4 ..6.25
Buffalo	W12 ....6.25
Cleveland	A7 ....6.25
Donora,Pa.	A7 ....6.25
Duluth,Minn.	A7 ....6.25
Fostoria,O.	S1 ....6.25
Johnstown,Pa.	B2 ....6.25
LosAngeles	B3 ....7.20
Milbury,Mass.	(12) N8 ..8.05
Monessen,Pa.	P7, P16..6.25
Palmer,Mass.	W12 ....6.56
Pittsburg,Calif.	C11 ....7.30
Roebling,N.J.	R5 ....6.55
Portsmouth,O.	P12 ....6.25
So.Chicago,Ill.	R2 ....6.25
So.SanFrancisco	C10 ....7.20
SparrowsPoint,Md.	B2 ..6.35
Struthers,O.	Y1 ....6.25
Trenton,N.J.	A7 ....6.55
Waukegan,Ill.	A7 ....6.25
Worcester	A7, T6, W12 6.55
Worcester,Mass.	J4 ....6.75

WIRE, Fine & Weaving(8" Coils)

Bartonville,Ill.(1)	K4 ..8.90
Buffalo	W12 ....8.90
Chicago	W13 ....8.90
Cleveland	A7 ....8.90
Crawfordsville,Ind.	M8..8.95
Fostoria,O.	S1 ....8.90
Johnstown,Pa.	B2 ....8.90
Kokomo,Ind.	C16 ....8.90
Monessen,Pa.	P16 ....8.90
Palmer,Mass.	W12 ....9.20
Portsmouth,O.	P12 ....8.90
Roebling,N.J.	R5 ....9.20
Waukegan,Ill.	A7 ....8.90
Worcester,Mass.	A7 T6 9.20

WIRE, Barbed	**Col.**
AlabamaCity,Ala.	R2 137
Aliquippa,Pa.	J5 141
Atlanta	A11 144
Bartonville,Ill.(19)	K4 144
Crawfordsville,Ind.	M8 ..146
Donora,Pa.	A7 141
Duluth,Minn.	A7 141
Fairfield,Ala.	T2 141
Houston,Tex.	B5 149
Johnstown,Pa.	B2 141
Joliet,Ill.	A7 141
KansasCity,Mo.	S5 153
Kokomo,Ind.	C16 143
Minnequa,Colo.	C10 147
Monessen,Pa.	P7 146
Pittsburg,Calif.	C11 161
Portsmouth,O.(18)	P12..148
Rankin,Pa.	A7 141
So.Chicago,Ill.	R2 137
So.SanFran.,Calif.	C10 161
SparrowsPoint,Md.	B2 143
Sterling,Ill.(1)	N15 141

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	123
Atlanta A11	126
Bartonville,Ill.(19) K4	123
Crawfordsville,Ind. M8	132
Donora,Pa. A7	123
Duluth,Minn. A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	..147
SparrowsPoint,Md. B2	..125
Sterling,Ill.(1) N15	123

WIRE, Upholstery Spring

Aliquippa,Pa.	J5 ....5.90
Alton,Ill.	L1 ....6.10
Buffalo	W12 ....5.90
Cleveland	A7 ....5.90
Donora,Pa.	A7 ....5.90
Duluth,Minn.	A7 ....5.90
Johnstown,Pa.	B2 ....5.90
LosAngeles	B3 ....6.85
Monessen,Pa.	P7, P16..5.90
NewHaven,Conn.	A7 ....6.20
Palmer,Mass.	W12 ....6.20
Pittsburg,Calif.	C11 ....6.85
Portsmouth,O.	P12 ....5.90
Roebling,N.J.	R5 ....6.20
So.Chicago,Ill.	R2 ....5.90
So.SanFrancisco	C10 ....6.85
SparrowsPoint,Md.	B2..6.00
Torrance,Calif.	C11 ....6.85
Trenton,N.J.	A7 ....6.20
Waukegan,Ill.	A7 ....5.90
Worcester,Mass.	A7 ....6.20

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala.	R2 127
Ala.City,Ala.	17-18ga.R2 214
Aliquippa,Pa.	9-14½ga.J5 131
Atlanta	A11 134
Bartonville,Ill.	(19) K4 ..131
Crawfordsville,Ind.	M8 133
Donora,Pa.	A7 131
Duluth,Minn.	A7 131
Fairfield,Ala.	T2 131
Houston,Tex.	B5 139
Johnstown,Pa.	B2 131
Johnstown,17ga.,6"	B2...205
Johnstown,17ga.4"	B2...208
Joliet,Ill.	A7 131
KansasCity,Mo.	S5 143
Kokomo,Ind.	C16 133
Minnequa,Colo.	C10 139
Monessen,Pa.	P7 136
Pittsburg,Calif.	C11 154
Portsmouth,O.(18)	P12 134
Rankin,Pa.	A7 131
So.Chicago,Ill.	R2 127
Sterling,Ill. (1)	N15 131

FENCE POSTS

ChicagoHts.,Ill.	C2 140
Duluth,Minn.	A7 125
Franklin,Pa.	F5 140
Huntington,W.Va.	W7 140
Johnstown,Pa.	B2 140
Marion,O.	P11 140
Minnequa,Colo.	C10 130
Moline,Ill.	R2 136
So.Chicago,Ill.	R2 140
Tonawanda,N.Y.	B12 140
Williamsport,Pa.	S19 150

TRACK BOLTS (20) Treated

KansasCity,Mo.	S5 ....9.85
Lebanon,Pa. (31)	R2 ....9.85
Minnequa,Colo.	C10 ....9.85
Pittsburgh	O3, P14 ....9.85
Seattle	B3 ....10.35

NAILS & STAPLES, Stock to dealers & mfrs. (7)

	Col.
AlabamaCity,Ala.	R2 118
Aliquippa,Pa.	(13) J5 118
Atlanta	A11 121
Bartonville,Ill.	(19) K4 118
Chicago,Ill.	W13 118
Cleveland	A9 125
Crawfordsville,Ind.	M8 122
Donora,Pa.	A7 118
Duluth,Minn.	A7 118
Fairfield,Ala.	T2 118
Galveston,Tex.	D7 126
Houston,Tex.	B5 126
Johnstown,Pa.	B2 118
Joliet,Ill.	A7 118
KansasCity,Mo.	S5 130
Kokomo,Ind.	C16 120
Minnequa,Colo.	C10 123
Monessen,Pa.	P7 124
Pittsburg,Calif.	C11 137
Portsmouth,O.	P12 134
Rankin,Pa.	A7 118
SparrowsPoint,Md.	B2..120
Sterling,Ill.(1)	N15 118
Torrance,Calif.	C11 138
Worcester,Mass.	A7 124

NAILS, Cut (100 lb keg)
To dealers (33)

Conshohocken,Pa.	A3 ..$7.35
Wheeling,W.Va.	10 ....7.35

TIE PLATES

Fairfield,Ala.	T2 ....4.50
Gary,Ind.	U5 ....4.50
Ind.Harbor,Ind.	I-2 ....4.50
Lackawanna,N.Y.	B2 ....4.50
Minnequa,Colo.	C10 ....4.50
Pittsburg,Calif.	C11 ....4.65
Seattle	B3 ....4.65
Steelton,Pa.	B2 ....4.50
Torrance,Calif.	C11 ....4.65

JOINT BARS

Bessemer,Pa.	U5 ....4.70
Fairfield,Ala.	T2 ....4.70
Ind.Harbor,Ind.	I-2 ....4.70
Joliet,Ill.	U5 ....4.70
Lackawanna,N.Y.	B2 ....4.70
Minnequa,Colo.	C10 ....4.70
Steelton,Pa.	B2 ....4.70

STANDARD TRACK SPIKES

Ind.Harbor,Ind.	I-2, Y1 6.15
KansasCity,Mo.	S5 ....6.40
Lebanon,Pa.	B2 ....6.15
Minnequa,Colo.	C10 ....6.15
Pittsburgh	J5 ....6.15
Seattle	B3 ....6.65
So.Chicago,Ill.	R2 ....6.15
Struthers,O.	Y1 ....6.15
Youngstown	R2 ....6.15

AXLES

Ind.Harbor,Ind.	S13 ....5.60
Johnstown,Pa.	B2 ....5.60

RAILS	**Std. No. 1**	**Std. No. 2**	**Std. No. 2**	**All 60 lb Under**
Bessemer,Pa. U5	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. U5	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
Ind.Harbor,Ind. I-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna,N.Y. B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

TOOL STEEL

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.650
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.490
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025

W	Cr	V	Mo	
6.4	4.5	1.9	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

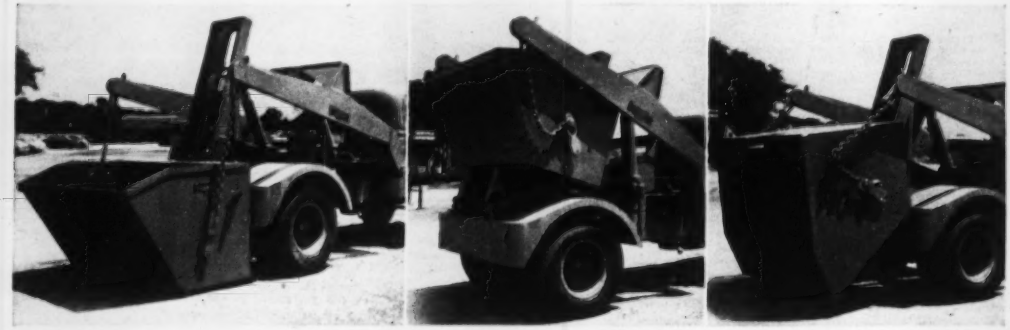
Footnotes:

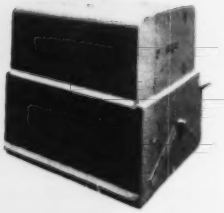
(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Plate only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn. base.
(22) Del. San Francisco Bay area.
(23) 26 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.60c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Bd. or square edge.
(33) To jobbers, deduct 30c.
(34) 7.25c for cut lengths.
(35) 7/8" and narrower.
(36) 1/4" and narrower.
(37) 15 gage & lighter; 40" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.033"; 0.033" and heavier, 0.25c higher.

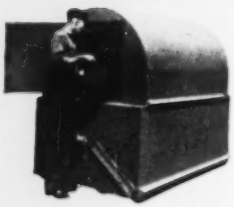
Key to Producers

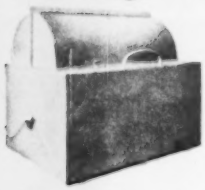
M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng-HighCarb.,Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,Eaton Mfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Rod & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 YoungstownSheet&Tube

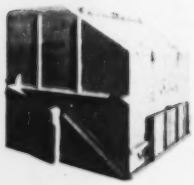
How The Dempster-Dumpster System Cuts Cost of Equipment . . . Eliminates Re-Handling of Materials!

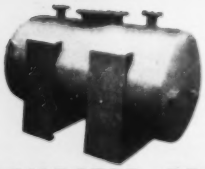










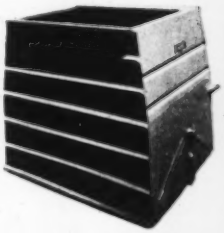


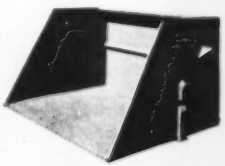
One Truck-Mounted Dempster-Dumpster Picks Up, Hauls and Dumps Scores of Pre-Loaded Containers, One After Another, Regardless of Size or Design for Handling Liquid, Solid, Trash, Dust, Light, Heavy or Bulky Materials.

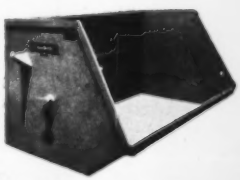
You can eliminate large investments in trucks, reduce the cost of gas, oil and maintenance . . . avoid time lost by loading crews while trucks make haul . . . and eliminate re-handling of materials by installing the Dempster-Dumpster System!

In the first place, three to five conventional dump trucks with crews cannot possibly do as efficient and economical a job as one truck-mounted Dempster-Dumpster with only one man, the driver. Dempster-Dumpster Containers are spotted at convenient accumulation points inside and outside your plant. The driver and his Dempster-Dumpster are constantly on the move servicing one loaded container after another. The Model LFW Dempster-Dumpster illustrated above handles containers up to 12 cu. yd. capacity. Containers up to 21 cu. yds are available for use with our Type ARLF and Type DTLF Dempster-Dumpsters. Your Dempster-Dumpster and driver may be handling liquids on one haul, solids on another, waste materials on another, etc. The Dempster-Dumpster driver can pick up a load, put it in carrying position and dump it in 2¼ minutes!

Without question, the Dempster-Dumpster System is the most economical and most efficient method of plant materials handling by truck yet devised! Write today for complete information. Manufactured exclusively by Dempster Brothers, Inc.







DEMPSTER BROTHERS, 612 Dempster Bldg., Knoxville 17, Tenn.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % — Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	....	+0.5	+2.5	....
¼	6.0	0.42	28.5	26.5	....	+3.5	+5.5	....
⅜	6.0	0.57	23.5	21.5	42.5	+10.0	+12.0	22.0
½	8.5	0.85	36.0	34.0	35.0	12.0	10.0	11.0
¾	11.5	1.18	39.0	37.0	38.0	16.0	14.0	15.0
1	17.0	1.68	41.5	39.5	40.5	19.5	17.5	18.5
1¼	23.0	2.28	42.0	40.0	41.0	20.5	18.5	19.5
1½	27.5	2.78	42.5	40.5	41.5	21.5	19.5	20.5
2	37	3.68	43.0	41.0	42.0	22.0	20.0	21.0
2½	58.5	5.82	43.5	41.5	42.5	23.0	21.0	22.0
3	76.5	7.62	43.5	41.5	42.5	23.0	21.0	22.0

Column A: Etna, Pa. N2 and 36⅛% on 3½", 4"; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜". Wheatland, Pa. W9, 2 points lower on ⅛", ¼", ⅜"; Following make ½" and larger: Lorain, O., N3; Youngstown R2 and 36⅛% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5; Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., Y1; Alton, Ill., (Gary base) 2 points lower discount L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 4% on ⅛", plus 6% on ¼", plus 13⅜ on ⅜" and 15.5% on 3½", 4"; Sharon, Pa. M6, plus 2.5 on ⅛", 1 point lower on ½", ¾", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3". Wheatland, Pa. W9, add 2 points on ⅛", ¼", ⅜", 1 point lower on ½", 2 points lower on 1", 1½", 2", 2½ points lower on 1¼", 2½", 3". Etna, Pa. N2 and 15.5% on 3½", 4". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 15⅛% on 3½" and 4"; Youngstown Y1, Aliquippa, Pa. J5 quotes 1 point lower on ⅜", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½" and 3".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % — Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	8.0	29.5	8.0
2½	58.5	5.82	32.5	11.5	32.5	11.5
3	76.5	7.62	32.5	11.5	32.5	11.5
3½	92.0	9.20	34.5	13.5	34.5	13.5
4	$1.09	10.89	34.5	13.5	34.5	13.5
5	1.48	14.81	37.0	16.0	37.0	16.0
6	1.92	19.18	37.0	16.0	37.0	16.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1

Column B: Aliquippa J5 quotes 1⅛ pts lower on 2", 1 pt lower on 2½-6 in.; Lorain N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	13.45	16.47	15.36	15.36
1¼	13	16.09	19.71	15.61	18.19
1½	13	17.27	21.15	17.25	20.30
1⅝	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2¼	13	24.35	29.82	24.50	28.84
2½	12	26.92	32.97	26.98	31.76
2⅝	12	29.65	36.32	29.57	34.76
2¾	12	32.11	39.33	31.33	36.84
3	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates— Carbon Base 10%	Plates— Carbon Base 20%	Strip— Cold-Rolled Carbon Base Both Sides 10%	Strip— Cold-Rolled Carbon Base Both Sides	Sheets— Carbon Base 10%	Sheets— Carbon Base 20%	Cu Base Both Sides
302	....	....	....	....	19.75	26.24–27.50	77.00
304	25.00	29.50	....	....	24.50	27.50–27.77	77.00
309	30.50	35.00	....	....	....	....	....
310	36.50	41.00	....	....	....	....	144.00
316	29.50	34.00	....	....	26.00	35.92–36.50	....
317	34.50	39.00	....	....	....	....	....
318	33.50	38.00	....	....	....	....	....
321	26.50	31.00–32.00	....	....	23.00	33.00	111.00
347	27.50	32.00	....	....	24.00	33.50–33.83	130.00
405	21.25	27.75	....	....	....	....	....
410	20.75	27.25	....	....	....	....	165.00
Nickel	33.55	45.15	41.00	54.00	....	....	....
Inconel	41.23	54.18	....	....	....	....	....
Monel	34.93	46.28	....	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	....	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	15
⅝-in. & ¾-in.	18.5
⅞-in. and larger	17.5
Longer than 6 in.:	
All diams.	14
Lag bolts, all diams.:	
6 in. and shorter	23
over 6 in. long	21
Ribbed Necked Carriage	18.5
Blank	34
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire bolts	14
Boiler & Fitting-Up bolts	31

NUTS

H.P. & C.P. Square:	Reg. Hvy.
½-in. & smaller	15 15
⅝-in. & ¾-in.	12 6.5
⅞-in.-1-½-in.	9 1
1⅛-in. & larger	7.5 1
H.P. Hex.:	
½-in. & smaller	26 22
⅝-in. & ¾-in.	16.5 6.5
⅞-in.-1-½-in.	12 2
1⅛-in. & larger	8.5 2
C.P. Hex.:	
½-in. & smaller	26 22
⅝-in. & ¾-in.	23 17.5
⅞-in. & 1-½-in.	19.5 12
1⅛-in. & larger	12 6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	35	28.5
⅝-in. & ¾-in.	29.5	22
⅞-in.-1-½-in.	24	15
1⅛-in. & larger	13	8.5
		Light
⅞-in. & smaller	.....	35
1-in. to 1-½-in.	.....	28.5
¾-in. to 1-½-in.	.....	26

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish	48 & 10
Plated finishes	31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	42
¾-in. through 1 in.	34
Longer than 6 in.:	
⅝-in. & smaller	26
¾-in. through 1 in.	4

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter	38
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	35
¼-in. diam. & larger	16
N.F. thread, all diams.	10

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.85c

½-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers List to list-plus-$1.

FLUORSPAR

Metallurgical grade, f. o. b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $33-$45.

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	41.00	34.00	31.25
302	41.25	36.75	31.50
303	43.25	40.25	34.00
304	43.25	38.75	33.00
309	56.00	50.00	44.75
316	57.00	50.00	49.25
321	49.25	48.25	37.00
347	53.75	52.25	41.50
410	36.50	30.50	25.75
416	37.00	37.00	26.25
420	44.00	47.00	31.25
430	39.00	31.00	26.25
501	27.50	26.00	14.25
502	28.50	27.00	15.25

Bait., Types 301-347 sheet, except 303 and 309 E2.

Brackenridge, Pa., Sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 and 0.25c lower on Types 302, 304, 321, 347; 0.50c lower on Types 309 and 316 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 3¢ per lb over Type 302, 32.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309, C4.

Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol 30.00-35.00

Toluol, one deg. 26.00-33.00

Industrial xylol ..25.00-33.50

Per ton bulk, ovens

Sulphate of ammonia $32-$45

Cents per pound, ovens

Phenol, 40 (carlots, non-returnable drums) ..17.25

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge iron	Cents
98+% Fe, carlots	17.00
Swedish, c.i.f. New York, in bags	8.85-9.95
Electrolytic Iron:	
Annealed, 99.5% Fe	42.50
Unannealed, 99 + % Fe	36.50
Unannealed, 99 + % Fe (minus 325 mesh)	58.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns	.83.00-148.00
Aluminum:	
Carlots, freight allowed	29.50
Atomized, 500 lb drums, freight allowed	33.50
Antimony	75.85
Brass, 10-ton lots	30.00-33.25
Bronze, 10-ton lots	.51.25-60.00
Phosphor-Copper, 10 ton lots	50.00
Copper:	
Electrolytic	.37.25-46.25
Reduced	.33.75-37.00
Lead	25.50
Magnesium	.75.00-85.00
Manganese:	
Minus 100-mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	63.00
Nickel unannealed	86.00
Nickel-Silver, 10-ton lots	45.00
Silicon	38.50
Solder (plus cost of metal)	8.50
Stainless Steel, 302	83.00
Zinc, 10-ton lots	23.00-30.50
Tungsten	Dollars
Melting grade, 99%, 60 to 200 mesh, freight allowed:	
1000 lb and over	6.00
Less than 1000 lb	6.15
98.8% minus 65 mesh, freight allowed:	
1000 lb and over	4.15
Less than 1000 lb	4.25
Molybdenum:	
99.9%, minus 200 mesh	3.25
Chromium, electrolytic 99% Cr min.	3.80

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll.fur.	$14.50-15.00
Connelsvll.fdry.	17.00-18.00
New Riv. foundry	21.30
Wise county, foundry	15.95
Wise county, furnace	15.20

OVEN FOUNDRY COKE

Kearny, N. J. ovens	.$22.75
Everett, Mass., ovens	
New England, del.	*24.80
Chicago ovens	23.00
Chicago, del.	24.50
Terre Haute, ovens	22.50
Milwaukee, ovens	23.75
Indianapolis, ovens	23.75
Chicago, del.	26.42
Cincinnati, del.	25.85
Detroit, del.	26.85
Ironton, O., ovens	22.50
Cincinnati, del.	25.12
Painesville, O., ovens	24.00
Cleveland, del.	25.82
Erie, Pa., ovens	23.50
Birmingham, ovens	20.30
Birmingham, del.	21.60
Philadelphia, ovens	**22.70**
Nevillelsland Pa., ovens	23.00
Swedeland, Pa., ovens	22.80
St. Louis, ovens	
St. Louis, del.	25.40
Portsmouth, O., ovens	22.50
Cincinnati, del.	25.12
Detroit, ovens	24.00
Detroit, del.	25.00
Buffalo, del.	26.89
Flint, del.	26.59
Pontiac, del.	25.47
Saginaw, del.	26.93

* Or within $4.15 freight zone from works.

OBTAINED:

information that helps you find hidden plant capacity!

Ordinary lighter flints hold the secret

For years industry had sought a way to broaden the use and capacity to produce many strategic corrosion and high heat resistant steels, by improving their hot workability. Carpenter A·E·Service hit the secret — applied Cerium, a rare earth element heretofore used chiefly in ordinary cigarette lighter flints.

Making a "nickel" work easier

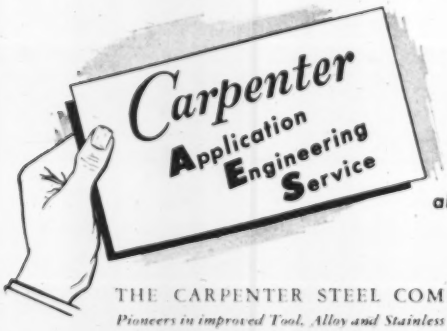
"Working" or machining 56% nickel alloy parts used to be a pain in the neck to industry. Then A·E·Service went to work for Carpenter customers. Result: Free-Cut Invar "36" was invented. Now 56% nickel alloy parts are machined faster, easier, and many new uses are now possible.

There's a reason why many plants are finding hidden plant capacity to meet higher production quotas these days. They're getting *more* from present machinery and manpower, because of Carpenter's **A**pplication **E**ngineering **S**ervice.

A·E·Service is Carpenter's way of working with customers to get maximum returns from every job involving specialty steels. That's why it's a revelation to watch the Carpenter man at work. He digs for every bit of data he can get. He analyzes the job, notes previous performance records, asks a lot of questions. Result: He's equipped to intelligently recommend the one steel best fitted for top performance.

And **A·E·S**ervice is more. It involves in-the-shop counsel by field engineers to spotlight opportunities for more output. When necessary, it puts a pioneering staff of laboratory technicians on the job. In answer to customers' needs, this is the same staff that invented the first free-machining stainless, the first low temperature air-hardening die steel, the first chrome-nickel alloy steel of its kind in the world.

This is Carpenter **A·E·S**ervice . . . an entirely different concept of service on specialty steels. You can count on it now and in the days ahead.



keeps you ahead of competition

THE CARPENTER STEEL COMPANY • READING, PA.

Pioneers in improved Tool, Alloy and Stainless Steels through continuing research

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140‡		Carbon	Floor
New York (city)	6.54	7.21	8.55	7.05	...	6.62	7.53	9.28	6.37	6.71	7.98
JerseyCity(c'try)	6.24	6.91	8.25	6.75	...	6.32	7.23	8.98	6.07	6.41	7.68
Boston (city)	6.40	7.18	8.63	6.35	...	6.25	7.04	9.00	6.40	6.86	7.84
Boston (c'try)	6.20	6.98	8.43	6.15	...	6.05	6.84	9.20	6.20	6.66	7.64
Phila. (city)	6.97	7.06	8.38	6.33	7.11	6.30	7.16	8.92	6.13	6.34	7.40
Phila. (c'try)	6.72	6.80	8.13	6.08	6.86	6.05	6.91	8.67	5.88	6.09	7.15
Balt. (city)	6.22	7.00	8.40	6.23	...	6.21	6.83	...	6.33	6.33	7.57
Balt. (c'try)	6.02	6.80	8.20	6.03	...	6.01	6.63	...	6.13	6.13	7.37
Norfolk, Va.	6.78	...	...	...	...	6.00	7.20	...	6.30	6.30	7.15
Richmond, Va.	5.95	6.57	8.10	6.14	...	5.91	6.59	...	6.22	6.86	7.47
Wash. (w'hse)	6.02	7.26	8.49	6.46	...	6.46	7.26	...	6.56	6.22	7.86
Buffalo (del.)	5.80	6.60	8.29	6.06	...	5.80	6.65	10.65††*	6.00	6.25	7.55
Buffalo (w'hse)	5.60	6.40	8.09	5.86	...	5.60	6.45	10.45††*	5.80	6.05	7.35
Pitts. (w'hse)	5.50	6.32	7.85	5.59	6.90	5.45	6.20	10.30††	5.65	5.65	6.89
Detroit (w'hse)	5.75	6.47	8.12	5.76	7.15	5.76	6.64	9.13	6.09	5.88	7.21
Cleveland (del.)	5.74	6.52	8.16	5.85	7.18	5.77	6.60	8.91	6.15	6.15	7.39
Cleve. (w'hse)	5.54	6.32	7.96	5.65	6.98	5.57	6.40	8.71	5.95	5.95	7.19
Cincin. (city)	5.99**	6.53	8.44	6.15	...	5.90	6.79	...	6.24	6.29	7.43
Chicago (city)	5.76	6.55	8.06	5.77	...	5.67	6.50	10.50††	5.85	5.90	7.09
Chicago (w'hse)	5.56	6.35	7.88	5.57	...	5.47	6.30	10.30††	5.68	5.70	6.89
Milwau. (city)	5.90	6.76	8.21	5.85	...	5.83	6.76	10.85††	6.01	6.06	7.25
Milwau. (c'try)	5.70	6.56	8.01	5.65	...	5.63	6.56	10.65††	5.81	5.86	7.05
St. Louis (del.)	6.06	6.85	8.20	6.00	...	6.00	6.85	10.55	6.23	6.33	7.53
St. L. (w'hse)	5.85	6.65	8.00	5.80	...	5.80	6.65	10.35	6.03	6.13	7.33
Kans. City(city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
KansCity(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Birm'hm (city)	5.75	6.55	6.90‡	5.70	...	5.70	7.53	...	5.85	6.10	8.25
Birm'hm(w'hse)	5.60	6.40	6.75‡	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city)	6.55	8.19	9.05‡	6.60	8.90	6.55	7.75	...	6.55	6.60	9.20
L. A. (w'hse)	6.35	7.90	8.85‡	6.40	8.70	6.35	7.55	...	6.35	6.40	8.70
Seattle-Tacoma	7.04	8.96	9.65	7.04	...	6.70	8.80	10.35	6.54	6.78	8.73
San Francisco	6.62	7.883	9.193	6.60	...	6.45	8.20	11.15	6.45	6.37	8.53

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; ** 16 gage; †† as annealed; §§ 15 gage. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; 1—500 to 1499 lb; 2—450 to 1499 lb; 4—3500 lb and over; 5—1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports.

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in applicable lake vessel rates, upper lake rail, freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

Eastern Local Ore

Cents per unit del., E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	17.00
Brazilian iron ore, 68-69%	24.00-25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-$1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 79.8-81.6c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	28.00
South African Transvaal	
44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00
Brazilian	
44% 2.5:1 lump	$32.00
Rhodesian	
45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00
Domestic—rail nearest seller	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Hayward, Ashland, Ky., Clearfield, Curwensville, Pa., Ottawa, Ill., $116.60. Hand-fired, St. Louis, Vandalia, Mo., Olive Hill, Ky., $156.20.

High-Heat Duty: Salina, Pa., $99.60, Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, Curwensville, Lumber, Lockhaven, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Ky., Troup, Athens, Tex., Stevens Pottery, Ga., Bessemer, Ala., Portsmouth, Oak Hill, Ottawa, Ill., $94.60.

Intermediate-Heat Duty: St. Louis, Farber, Vandalia, Mo., West Decatur, Orviston, Beach Creek, Curwensville, Lumber, Lockhaven, St. Marys, Clearfield, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Hayward, Ky., Athens, Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $88; Bessemer, Ala., $79.20.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., $79.20; Farral, O., $78.50; St. Marys, Pa., $76; Ottawa, Ill., $70.

Ladle Brick

Dry Press: Chester, New Cumberland, W. Va., Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., $66.

Wire Cut: Chester, Wellsville, O., $64.

Malleable Bung Brick

St. Louis, Vandalia, Farber, Mo., Olive Hill, Ky., $105.60; Beach Creek, Pa., $94.60; Ottawa, Ill., $90.

Silica Brick

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $94.60; Hays, Pa., $100.10; Joliet, Rockdale, Ill., E. Chicago, Ind., $104.50; Lehi, Utah, Los Angeles, $111.10.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $92.40.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $93.50.

Basic Brick

Per net ton, Baltimore or Chester, Pa. Burned chrome brick, $73-$78; chemical-bonded chrome brick, $77-$82; magnesite brick, $99-$104; chemical-bonded magnesite, $88-$93.

Magnesite

Per net ton, Chewelah, Wash., Luning, Nev. Domestic dead-burned, ⅜" grains; bulk, $36.30; single paper bags, $41.80.

Dolomite

Per net ton. Domestic burned bulk; Bonne Terre, Mo., $12.15; Martin, Millersville, Clay Center, Woodville, Gibsonburg, O., Billmeyer, Plymouth Meeting, Blue Bell, Williams, Pa., Millville, W. Va., $13; Nario and Bettsville, O., $13.75.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 10.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton 16.0c, less ton 16.9c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.95c per lb of briquet, c.l. packaged 11.75c, ton lot 12.55c, less ton 13.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Siliconmanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 11.15c, per lb of briquet, c.l. packed, 11.95c, ton lot 12.75c, less ton 13.65c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size — weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

NOTE: For current quotations on manganese, titanium and "other" ferroalloys, see page 568, Jan. 7 issue; for chromium, silicon, vanadium, boron, tungsten alloys, page 101 Jan. 14 issue.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Oct. 23, 1951

STEELMAKING SCRAP COMPOSITE

Jan. 17	$43.00
Jan. 10	43.00
Dec. 1951	43.00
Jan. 1951	46.33
Jan. 1947	31.20

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin, and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Grade 1 / Basing Point	No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades	
2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	—10.00
7. Mixed Boring & Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00
Elec. Furnace and Fdry. Grades	
11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
Foundry Steel:	
20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
30. Hard Steel cut 2 ft. & under	+ 3.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for Grades 12 and 8, respectively. (2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes and in the case of No. 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10. (3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth. (4) Premiums for Grades 11-18, 20 and 21 may be charged only upon OPS authorization or when sold for use in electric and open-hearth furnaces or foundries. (5) Prices for Grade 29 may be charged only when sold for forging or rerolling purpose. (6) Prices for Grade 30 may be charged only when sold upon OPS authorization to a gray iron foundry; otherwise price for Grade 20 will prevail.

Special Pricing Provisions

(1) Sellers of Grades 26 and 27 may make an extra charge of $1.50 per ton for loading in box cars, or 75 cents per ton for covering gondola cars with a weather-resistant covering. (2) Ceiling price of pit scrap, ladle scrap, salamander scrap, skulls, skimmings or scrap recovered from slag dumps and prepared to charging box size, shall be computed by deducting from the price of No. 1 heavy melting steel of dealer and industrial origin, the following amounts: Where iron content is 85% and over $6; 75% and over, $10; less than 75%, $12. (3) Ceiling price of any inferior grade of scrap not listed shall not exceed the price of No. 1 bundles less $15.00.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 8.00
9. Uncut Frogs, Switches	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural Wrought Iron and/or steel, uncut	— 8.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3 oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Firebrkes	+ 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Price established for Grade 15 may be charged only when purchased and sold for rerolling uses, otherwise, ceiling shall not exceed that for Grade 14. (2) Price established for Grade 30 may be charged only when sold to a producer of wrought iron; otherwise, ceiling shall not exceed that for No. 1 heavy melting steel. (3) Price for Grade 25 may be charged only when sold for rerolling and forging purposes; otherwise ceiling shall not exceed that for base grade (No. 1).

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:	
1. No. 1 (Cupola)	$42.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable)	45.00
4. No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop Broken Machinery	52.00

Restrictions on Use

(1) Ceiling shipping point price which a basic open-hearth consumer may pay for No. 1 cast iron, clean auto cast, malleable or drop broken machinery cast shall be ceiling price for No. 2 charging box cast. (2) Ceiling shipping point price which any foundry other than a malleable iron producer may pay for Grade 10 shall be ceiling price for No. 1 cast iron.

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 3, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 13, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.
For preparing into:
(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

Whenever scrap has arrived at its point of delivery and consumer engages a dealer to prepare such scrap, no fee may be charged for such services unless consumer obtains prior written OPS approval.

Commissions

No commission shall be payable to a broker in excess of $1.

Premiums for Alloy Content

No premium may be charged for alloy content except: $1.25 per ton for each 0.25% of nickel where scrap contains not less than 1% and not over 5.25% nickel; $2 per ton for scrap containing not less than 0.15 per cent molybdenum and $3 for scrap containing not less than 0.65% molybdenum; for scrap containing not less than 10% manganese, $4 for scrap in sizes larger than 12 x 24 x 8 in., and $14 for scrap cut in that size or smaller (applicable only if scrap is sold for electric furnace uses or on NPA allocation); $1 for scrap conforming to SAE 52100.

Switching Charges

Switching charges to be deducted from basing point prices of dealer, industrial and nonoperating railroad scrap, to determine ceiling shipping point prices for scrap originating in basing points are per gross ton:

Alabama City, Ala., 43c; Ashland, Ky., 47c; Atlanta, 51c; Bethlehem, Pa., 52c; Birmingham, 50c; Brackenridge, Pa., 53c; Buffalo, 83c; Butler, Pa., 65c.
Canton, O., 51c; Chicago (including Gary, Ind.), $1.34; Cincinnati (including Newport, Ky.), 65c; Claymont, Del. (including Chester, Pa.), 79c; Cleveland, 76c.
Coatesville, Pa., 50c; Conshohocken, Pa., 20c.
Detroit, 95c; Duluth, Minn., 50c.
Harrisburg, Pa., 51c; Houston, 57c.
Johnstown, Pa., 75c.
Kansas City, Mo., 78c; Kokomo, Ind., 51c.
Middletown, O., 26c; Midland, Pa., 75c; Minnequa, Colo., 33c; Monessen, Pa., 51c.
Phoenixville, Pa., 51c; Pittsburg, Calif., 65c; Pittsburgh (including Bessemer, Homestead, Duquesne, Munhall), 99c; Portland, Oreg., 52c; Portsmouth, O., 51c.
St. Louis (including Federal, Granite City, E. St. Louis, Madison, Ill.), 51c; San Francisco (including So. San Francisco, Niles, Oakland), 66c; Seattle, 59c; Sharon, Pa., 75c; Sparrows Point, Md., 20c; Steubenville, O., 51c.
Warren, Pa., 75c; Weirton, 70c.
Youngstown, 75c.

HAMILTON, ONT.

(Delivered Prices)

Heavy Melt	$35.00
No. 1 Bundles	35.00
No. 2 Bundles	35.00
Mechanical Bundles	31.50
Mixed Steel Scrap	31.00
Mixed Borings, Turnings	32.00
Rails, Remelting	35.00
Rails, Rerolling	38.00
Busheling	29.50
Bushelings new factory:	
Prep'd.	33.00
Unprep'd.	31.00
Short Steel Turnings	32.00
Cast Iron Grades*	
No. 1 Machinery Cast	55.00

* F.o.b. shipping point.

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The Metal Market

Conservation and substitution of alternative materials loom as pressing problems in nonferrous metal field. U. S. makes progress in tin negotiations

INCREASING attention to questions of conservation and the substitution of alternative materials is required to reduce the gap between requirements and production of several strategic materials. These problems are being studied by individual companies, by representatives of entire industries, and by government officials, the latter on an international as well as national scale.

Preliminary studies undertaken by various committees of International Materials Conference indicate that supplies of copper, nickel, colbalt, tungsten, molybdenum and sulphur are not likely to overtake demand this year nor in 1953, even if based on optimistic assumptions as to future production increases.

Less for Civilians—Prospects for defense requirements for 1952 may result in greater reductions in the amounts of some materials available for civilian consumption, according to a report issued by the Conference. Improved conservation methods will be increasingly important; "even with increased application of conservation practices, the gap is not likely to be bridged. Thus, the necessity of substitution of alternative materials and the adoption of alternative industrial processes can already be foreseen as imperative."

Under the direction of IMC, copper, zinc, tungsten, molybdenum and cobalt are allocated for the first quarter of this year. The Sulphur Committee is expected to make recommendations soon for the first part of 1952. In the case of nickel, a purely interim measure has been arranged for the month of January. The allocation of cobalt for the first quarter is provisional, pending further study.

Under an agreement arranged outside of IMC, the United States and Britain will share aluminum, steel and tin during 1952. Based on unofficial reports, the United States will supply Britain with 1 million tons of steel while Britain will loan the United States 15,000 tons of Canadian aluminum to be repaid in kind by next year. Official announcement of details of the agreement are expected momentarily.

A separate agreement covering tin also has been made between these two countries. This agreement calls for delivery of 20,000 tons of Malayan tin to the United States over the next 12 months at a price close to $1.21, c.i.f. New York. This tonnage represents the approximate annual volume of United States imports from Malaya. Including Bolivian and Indonesian tin, United States consumers take an average of 80,000 tons of imported tin in normal years.

The agreement for Malayan tin opens up speculation on the probable influence it will have on negotiations for Bolivian tin. The last contract was on the basis of $1.12 and Bolivia's latest offer on a new contract was $1.50

The deadlock between this country and Bolivia, if not broken by Feb. 1, may force a shutdown of the Longhorn tin smelter in Texas City, Tex., on May 1, says the president of Tin Processing Corp., operator of the smelter. The smelter has cut its normal monthly production from 3000 tons to between 1700 tons and 1800 tons so that it can continue operating. Only four of the plant's nine smelting furnaces are operating.

Copper Deliveries Dip

Shortage of copper will force curtailment of consumer durable goods in the second quarter to about 10 per cent below the first quarter level. Brass mill products are provided by Defense Production Administration to sustain production at 22 per cent to 29 per cent; aluminum, at about 30 per cent. Brass mill product allotments, including ammunition cases, are increased to a total of 240 million pounds; copper wire mill products, chiefly copper wire, are cut 18 million pounds to a total of 380 million pounds.

Reflecting the tightness in supplies, deliveries of refined copper to fabricators declined in December to 119,577 tons from 123,646 tons in November. These tonnages include copper released from the government's stockpile. Total deliveries last year declined to 1,367,787 tons from 1,371,464 tons in 1950, reports the Copper Institute. Output by refineries in December declined to 98,532 tons from 103,614 tons in the preceding month, making the year's total 1,199,784 tons, or about 71,500 tons under the 1950 total.

Aluminum Shipments Hold

Shipments of aluminum wrought products held steady in November, although due to the shorter month the total of 139,176,000 pounds showed a 3 per cent dip under the October total of 144,135,000 pounds. Total for the first 11 months was 1,621,954,000 pounds compared with 1,558,728,000 pounds for the like 1950 period. The combined total for plate, sheet and strip was slightly lower last year than in 1950 while the totals for other products showed gains.

Shipments of magnesium wrought products in November amounted to 1,645,000 pounds, a decrease of 7 per cent from the previous month, but a 26 per cent increase over November, 1950. Magnesium wrought products shipped in the first 11 months of 1951, at 17,557,000 pounds, exceeded the previous year's corresponding figure by 53 per cent.

Because the backlog of unfilled orders for aluminum and aluminum products threatens to reach 190 million pounds by June 30, NPA plans to reduce aluminum allotments to keep the backlog at about 70 million pounds, or 10 per cent of quarterly production. The carryover of unfilled orders amounted to 90 million pounds at the end of 1951 and is expected to total 153 million pounds by Mar. 31. NPA estimated that the backlog would rise to 190 million pounds by the end of the second quarter.

Shortages of aluminum and aluminum products at present are almost entirely limited to ingot for foundries and for destructive purposes.

Urge Lead Tariff Suspension

Lead consumers urge early action by Congress to suspend the duty on imported lead. They point out that the recent "softening" of lead prices in the world market has made it possible to import the metal under more favorable conditions than those which prevailed previously. Suspension of the duty would result in a still larger flow of foreign metal.

Foreign lead from Mexico, Australia and Europe is being offered consumers in the United States on the basis of 19.00c a pound for the common grade. Bulk of the offerings constitute a grade for which a premium of 10 points, or a price of 19.10c a pound, New York, is permitted under OPS regulations. It is the grade most universally used by lead consumers. A relatively small amount is offered for prompt delivery, the balance for February, March and April delivery.

Zinc Stocks Decline

By limiting the amount of business booked, zinc smelters reduced their order backlogs to 50,509 tons at the end of last year, the smallest total in almost two years. Stocks of slab zinc at the end of December totaled 21,901 tons compared with 25,041 tons at the end of November. The decline was due to an increase in shipments to 84,909 tons from 77,419 tons in November while production increased to only 72,814 tons from 70,084 in the preceding month. Despite the shortage of zinc, the government continues to withdraw metal for the permanent stockpile. These withdrawals averaged 3402 tons a month in 1951.

Reynolds Expands in West

Expansion of facilities for production of aluminum continues at a fast pace. Reynolds Metals Co., Louisville, announced plans to increase capacity at its pig aluminum plant in Longview, Wash., from 63 million pounds to 100 million pounds a year. The project is expected to be completed by late summer or early fall.

Final production figures for 1951 are not available, but the report for the first ten months of the year showed a gain in production of 17 per cent over the like 1950 period.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass ingots: 85-5-5-5 (No. 115) 27.25c; 88-10-2 (No. 215) 38.50c; 80-10-10 (No. 305) 32.25c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 19.50c; brass special 19.75c; intermediate 20.00c. East St. Louis; high grade 20.85c, delivered.

Lead: Common 18.80c; chemical 18.90c; corroding 18.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 18.00c; grade 2, 17.75c; grade 3, 17.25c; grade 4, 16.50c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 103.00c.

Antimony: American 99-99.8% and over but not meeting specifications below 50.00c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 50.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $206-$211 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b., Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.55 del.; special or patented shapes $2.80.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 88.00c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill; effective Aug. 23, 1951)

Sheet: Copper 41.68; yellow brass 38.28; commercial bronze, 95% 41.61; 90% 41.13; red brass, 85% 40.14; 80% 39.67; best quality, 39.15; nickel silver, 18% 53.14; phosphor-bronze grade A, 5% 61.07.

Rod: Copper, hot-rolled 37.53; cold-drawn 38.78; yellow brass free cutting 32.63; commercial bronze 95% 41.30; 90% 40.82; red brass 85% 39.83; 80% 39.36.

Seamless Tubing: Copper 41.72; yellow brass 41.29; commercial bronze, 90% 43.79; red brass, 85% 43.05.

Wire: Yellow brass 38.57; commercial bronze, 95% 41.90; 90% 41.42; red brass, 85% 40.43; 80% 39.96; best quality brass 39.44.

(Base prices, effective Dec. 26, 1951)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 28.54; 30,000 lb lots, 28.67; l.c.l., 29.17. Weatherproof, 100,000 lb, 30.35; 30,000 lb, 30.60; l.c.l., 31.10. Magnet wire, del., 15,000 lb or more, 34.50; l.c.l., 35.25.

ALUMINUM

(30,000 lb base, freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In.	Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48		30.1	...	...
0.135-0.096	12-48		30.6	...	...
0.095-0.077	12-48		31.2	29.1	33.2
0.076-0.061	12-48		31.8	29.3	33.4
0.060-0.048	12-48		32.1	29.5	33.7
0.047-0.038	12-48		32.5	29.8	34.0
0.037-0.030	12-48		32.9	30.2	34.4
0.029-0.024	12-48		33.4	30.5	35.0
0.023-0.019	12-36		34.0	31.1	35.7
0.018-0.017	12-36		34.7	31.7	36.6
0.016-0.015	12-36		35.5	32.4	37.6
0.014	12-24		36.5	33.3	38.9
0.013-0.012	12-24		37.4	34.0	39.7
0.011	12-24		38.4	35.0	41.2
0.010-0.0095	12-24		39.4	36.1	42.7
0.009-0.0085	12-24		40.6	37.2	44.4
0.008-0.0075	12-24		41.9	38.4	46.1
0.007	12-18		43.3	39.7	48.2
0.006	12-18		44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R-317-T4, 17S-T4	R-317-T4	—Hexagonal— 17S-T4
0.125	52.0	....	....
0.156-0.0188	44.0	....	....
0.219-0.313	41.5	....	....
0.375	40.0	46.0	48.0
0.406	40.0	....	....
0.438	40.0	46.0	48.0
0.469	40.0	....	....
0.500	40.0	46.0	48.0
0.531	40.0	....	....
0.563	40.0	....	45.0
0.594	40.0	....	....
0.625	40.0	43.5	45.0
0.688	40.0	....	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	....	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	....	....
1.625	36.5	....	39.5
1.688-2.000	36.5	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $24.00 per cwt; add 50c cwt 10 sq ft to 140 sq ft. Pipe: Full coils $24.00 per cwt. Traps and bends: List prices plus 65%.

ZINC

Sheets 26.50c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 25.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 25.50-26.50c; over 12-in., 25.50-26.50c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb, 75.50c; 3000 to 10,000 lb, 76.50c, 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 400 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 400 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers 77.7c; 100 or 350 lb drums only, 100 to 600 lb, 63.1c; 700 to 1900 lb, 60.6c; 2000 to 9900 lb, 58.9c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.19; 500 to 999 lb, $1.195; 200 to 499 lb, $1.20; less than 200 lb, $1.215. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 47.7c, 10 or more drums, 45.7c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.0009; more than 2000 lb, 98.09c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 87.23c; 100 lb kegs 88.23c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group I: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red scrap, solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Zinc Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment)

Unsweated zinc dross, 13.75c; new clippings and trimmings, 15.50c; engravers' and lithographers' plates, 15.50c; die cast slabs, min. 90% zinc, 13.75c; old zinc scrap, 12.25c; forming and stamping dies, 12.25c; new die cast scrap, 11.75c; old zinc die cast radiator grille, 11.50c; old die cast scrap, 10.50c.

Lead Scrap Ceiling Prices

(F.o.b. point of shipment)

Battery lead plates, 19.00c per lb of lead and antimony content, less smelting charge of 2 cents per lb of material in lots 15,000 lb or more; less 2.25c in lots less than 15,000 lb, or a flat price of 11.25c a pound of battery plates. Used storage batteries (in boxes) drained of liquid, 7.65c for 15,000 lb or more; 7.45c for less than 15,000 lb. Soft lead scrap, hard lead scrap, battery slugs, cable lead scrap or lead content of lead-covered cable scrap, 17.25c in lots of 20,000 lb or more; 16.50c in lots under 20,000 lb.

Aluminum Scrap Ceiling Prices

(Cents per pound f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50; Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00; Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
1952								
Jan. 2-17	24.50	18.80	19.50	103.00	19.00	50.00	56.50	88.00
1951								
Dec. 1-31	24.50	18.80	19.50	103.00	19.00	50.00	56.50	88.00
Dec. Avg.	24.50	18.80	19.50	103.00	19.00	50.00	56.50	88.00
Nov. Avg.	24.50	18.80	19.50	103.00	19.00	44.56	56.50	88.00
Oct. Avg.	24.50	18.726	19.426	103.00	19.00	42.00	56.50	88.12
Sept. Avg.	24.50	18.80	17.50	103.00	19.00	42.00	56.50	90.16
Aug. Avg.	24.50	16.80	17.50	103.00	19.00	42.00	56.50	90.16
July Avg.	24.50	16.80	17.50	106.00	19.00	42.00	56.50	90.16
June Avg.	24.50	16.80	17.50	117.962	19.00	42.00	56.50	88.492
May Avg.	24.50	16.80	17.50	139.923	19.00	42.00	50.50	90.16
Apr. Avg.	24.50	16.80	17.50	145.735	19.00	42.00	50.50	90.16

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits del. New York; Aluminum primary ingots, 99% del; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Sheets, Strip . . .

Sheet and Strip Prices, Page 103 & 104

Boston—Relatively better supply of straight chromium stainless is due to inability or reluctance of considerable segment of consumers to use that grade; corrosion-resistance, finish and in some cases annealing are some properties questioned by users, including chemical, paper mill machinery, restaurant and hospital equipment industries. Straight chromium is available in considerable quantities with delivery as close as February. Carbon sheets and strip are easier in spots, notably narrow cold strip for which mills have some space open for second quarter.

Philadelphia—Supply of galvanized sheets, one of the tightest of flat-rolled products, may increase slightly in March since producers are getting more zinc. In the case of carbon sheets, large carryovers are forcing producers to reduce the volume of new business accepted. Second-quarter sheet schedules are filled. While demand for consumer durable goods is declining, with the exception of a few specialties, defense needs are tending upward. Tonnage for the latter is covered by higher super ratings.

Pittsburgh—Mills note some signs of automotive readjustments of inventories. Demand continues strong for most all the flat-rolled products. Hot-rolled and galvanized material are the tightest in this area. There is increased inquiry for electrical sheets, a product which has been in relatively easy supply for months. Any slack in flat-rolled demand will enable district mills to allot more time on their continuous hot-strip mills for rolling light gage plates. Second-quarter bookings are going along in an orderly fashion with CMP tickets still to be issued for the quarter.

Cincinnati — Sheet mills, opening books for second quarter, find that demand continues at a high level. Easier supply is not imminent. Pressure for cold-rolled is receding, but over-all needs are sustained by a gradual increase in defense tonnage.

Chicago—Cold-rolled sheet supply continues to grow easier, attributable to decline in production of automobiles and home appliances under impetus of the government's limitation programs. Only to a small extent does defense goods take up this slack. Hot-rolled sheets and strip hold desperately tight and likely will remain so for some time. Conversion transactions have lost their attractiveness to many consumers.

St. Louis—Softening in sheet demand gets more and more noticeable here. Although this district supplies few sheets to automobile makers, the effect of the car cutback is beginning to trickle down to sheet consumers here who normally keep local demand high. There is no let-up in pressure on galvanized sheets.

Birmingham — Demand remains strong for virtually every flat rolled product as it has in this district for years. Regional output of sheets usually is not sufficient to meet normal demands. Strip demand is moderate.

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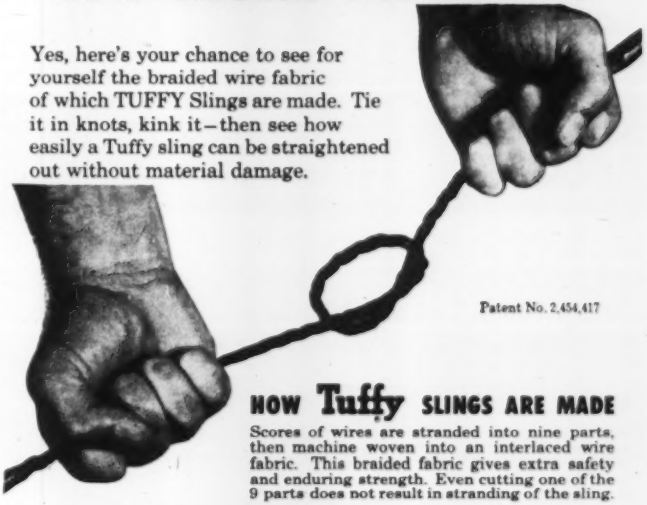

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Steel Bars . . .

Bar Prices, Page 103

Philadelphia—Of major rolled carbon products, defense requirements are taking an increasing share of bars which, with some users, are now tightest of these items. Shell steel directives are taking a considerable bite out of bar production. Mills, scheduling on monthly basis, are filled for April. On tonnage covered by the series of super-priorities, orders are being taken for delivery any time through second quarter. Some producers are holding open May and June schedules to latest possible moment to avoid later revisions.

Pittsburgh—Demand is still strong for all sizes in this district. First quarter books are filled and second quarter business is being entered slowly. Mills look for tighter supply as new military and defense projects loom on the horizon. Cutbacks in automotive production will be of some help in easing demand, but makers look for continued tight supply most of 1952. Forging and cold-finished bars are currently in greatest demand here.

St. Louis — Merchant bar demand here is so stringent civilian customers usually don't bother going first to the mills. First stop is Washington for a directive. Result is a heavy excess of CMP tickets that cannot be honored. Reinforcing bars are equally tight, although they are committed on a completed-job basis, whereas merchant bar consumers must compete each quarter for new supplies. Both products are booked through the quarter, beyond which new orders currently are being rejected.

Seattle—Merchant bar demand is slow. Production of this item accounts for not more than 20 per cent of current mill schedule.

Plates . . .

Plate Prices, Page 103

New York—Heavy gage sheared plate capacity for second quarter has been taken up with some revisions in schedules likely later when more consumers have complete allotments. April will be taken up largely by super priority tonnage, which includes a fair volume of rolled armor plate. Lighter plates from strip mills are in better supply; numerous users are reluctant to specify this tonnage, if sheared plates are available. Shortage of plates will result in some deferrals of less essential storage and oil transportation projects, although second-quarter steel allocation to Petroleum Administration for defense is 1,710,375 tons. Railroad car-building allotment will permit construction of 18,000 units in second quarter compared with 21,450 in first quarter. Railroad Division total of 1,599,141 tons also supports construction of 700 railway locomotives.

Boston—For the most part, fabricators are living off backlogs. Weldment shops report a gain in unfilled business. Shipbuilding is perking up, and allotments to the Maritime Administration for second quarter having increased to 121,100 tons. Steel is provided for tankers under construction and about two-thirds of tonnage requested to start three additional tankers. New contracts for eight supertankers for foreign accounts, seven of 29,000 tons deadweight and another of 17,800 tons, raises Shipyard backlogs to the highest level since the war. Four will be built at Quincy, Mass., and four at Sparrows Point, Md.

Philadelphia—For alloy and clad plates, producers experience difficulty in obtaining nickel and molybdenum to meet approved melt schedules. Demand for both is in excess of supply, largely for defense-supporting industries.

Slight headway is made toward improving supply or in covering second quarter distribution tickets on heavy gage carbon plates. Carryovers constitute part of the volume of new tonnage available. Lighter gages, 3/16 and ¼-inch, are getting some relief from strip mill output. Work will be resumed in the second quarter on Mariner class cargo ships because of slightly heavier allotments to yards for these requirements.

Pittsburgh—Second quarter bookings are not complete in this area. Mills anticipate extremely tight supply for many months to come. Rolling of lighter gage material on district continuous hot-strip mills is offering some relief, but fabricators are still begging for tonnage that is not available. Some foreign material has been reported moving into the area.

Chicago—Plate fabricators report somewhat better success in cashing CMP tickets in first quarter than was the case in fourth, and indications are for better performance in the April-June quarter. A sizable tonnage covered by tickets will not be accommodated. Demand for all types of heavy construction shows no signs of ameliorating.

Birmingham—Plate production remains at virtual capacity in this district. Need for that product, especially in heavier gages, is undiminished. Production of steel pipe, most of it large diameter, continues to take a large slice of total plate output.

Seattle—Plates continue in critical supply. Small shops are seeking defense subcontracts, insuring priorities.

Award of 6200 tons steel piling for The Dalles, Oreg., power project was equally divided by the U. S. Engineer between Inland Steel Co. and Columbia-Geneva Steel Division, United States Steel Co.

Wire . . .

Wire Prices, Page 105

New York—Slackening in buying, deferments and some cancellations have cut back high carbon wire schedules to extent some openings are likely later this quarter. Orders are coming in slowly for second quarter with considerable space yet to be filled. Except for some demand for defense requirements, demand for precision springs shows little, if any, improvement. Valve and clock spring wire are off sharply, although the

A-1029

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latter shows signs of revival. Finishing departments in some cases are not operating at capacity.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 103

Los Angeles—Continuation of California's entire $100 million highway program is assured by acceptance by reinforcing bar producers of 85 to 95 per cent of state's bar allocations. According to Frank Durkee, state director of public works, mill acceptance of allocations for most states averages only 50 per cent.

Seattle—Mill backlogs declined during the holiday period, but are still larger than normal. New business has been lacking in recent weeks. Military and defense installations, up for early bidding, involve major tonnages of reinforcing and indicate active quarter.

Structural Shapes . . .

Structural Shape Prices, Page 103

Boston—Structural fabricators are under pressure to use standard shapes where possible instead of wide-flanged material for which productive capacity is limited. There is a slight pick up in bridge estimating, involving a small tonnage. Electric power plant expansion will take more structural steel this year and in 1953. For Bureau of Public Roads, second-quarter allotments total 70,000 tons compared with 53,000 tons in the first quarter.

New York—Placement of contracts totaling close to 40,000 tons temporarily overshadows dwindling volume of new fabricated structural steel up for estimates. Three projects, including one subway section, take bulk of this tonnage. Structural shops are unable to handle all second quarter tickets due to congested mill schedules. In this respect, fewer tickets have been returned for revalidation than was the case of those for first quarter.

Philadelphia—Delays in receiving CMP tickets from customers make it difficult for structural fabricators to obtain plain material from mills. To fill an anticipated gap in requirements in second half, some recommend placement now of contracts for bridges and other public works for construction to be done in third and fourth quarters. Industrial expansion program will be slowed down in second quarter by allotments of 213,000 tons. To maintain projects in this field now under way 275,000 tons would be needed.

Pittsburgh—Order books for second quarter are filling rapidly and mills expect many unchanged CMP tickets to make the rounds of the area. All sized shapes are in strong demand with fabricators crying for any and all tonnage they can get. Mills don't expect demand to remain at capacity once industrial and public works building programs reach virtual completion later this year. Mills expect to be looking for business during the last two quarters of 1952 unless the government through NPA increases allocations for new building programs. Many producers

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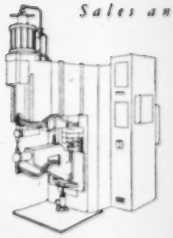

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think the shape shortage will be only a memory by mid-year.

Chicago—Fabricating shops are running near capacity. Jobs must be handled on a start-and-stop basis to await receipt of mill shipments of different sizes, reflecting badly unbalanced shape inventories. Activity will continue high for the next several months. New inquiry has dropped off with NPA using a more firm hand in screening and approving jobs according to essentiality.

Seattle—Fabricators report an active demand for small tonnages. Backlogs will carry through the first quarter. Several important contracts have been placed, including 3840 tons for Bonneville transmission towers. Important tonnages are involved in projects up for award this quarter.

Steel interests are in sharp competition with wood on U. S. Engineering Corps projects. At Auburn, Wash., where five warehouses are to be built (5000 tons of shapes involved if steel is adopted) rebids have been asked following rejection of contractor-designed wooden structures.

Tin Plate . . .

Tin Plate Prices, Page 104

Pittsburgh—Canmakers are happy over NPA's amending of CMP Regulation No. 1 which guarantees that their CMP tickets will be good until the plate is shipped to their premises. Formerly, any unshipped tonnage from a quarter had to be applied to allotments for the quarter in which the material was shipped. Current production outlook is good, if a general nation-wide steel strike can be avoided. Mills are expressing optimism over signs that point to equitable pig tin allocations for the balance of 1952. Prices will not be announced until after the outcome of the steel arbitration proceedings now in progress with the WSB. Operations continue at a high pitch and steelmakers see a good year if pig tin allocations continue at the present rate and peace is effected with labor.

Semifinished Steel . . .

Semifinished Prices, Page 103

Pittsburgh—Steelmaking operations slid back two points last week in this district to 96 per cent. This is due to the shutdown of five of U. S. Steel's open hearths and others at Pittsburgh Steel Co., the latter being down for enlarging. Big Steel said that better-than-normal operations from their other units helped to offset some of the production loss from the units out of service. Nearly 7000 tons of semifinished steel were lost due to the scrap shortage. Pittsburgh Steel has completed installation of its new 66-inch high lift blooming-slabbing mill at Monessen, Pa., which has been a factor in cutting down their operating rate for some time back.

Los Angeles—Steelmaking at U. S. Steel Co.'s Columbia-Geneva Division mill at Torrance, Calif., was stopped by a strike of CIO United Steelworkers. Arising from the discharge of two workers, the strike has idled 100 men and is costing 600 tons of steel daily.

Pig Iron . . .

Pig Iron Prices, Page 102

Chicago—Gray iron foundry operations, which are much affected by production limitations on automobiles and consumer hard goods, show little change. It is expected that melting rates will remain fairly stable for balance of first quarter. Iron demand is fairly rip and tuck with supply. Passing of a steel strike threat caused foundry operators to be less apprensive of iron availability only momentarily. Now it is feared that iron supply may be jeopardized by use of more blast furnace hot metal in steelmaking to offset production now being lost because of scrap shortage. Of the district's 42 blast furnaces, 40 are blowing.

Buffalo—Although slow in developing, a number of leading iron consumers engaged in government work are expanding operations, necessitating additional merchant pig iron tonnage. This increased demand bridges the gap created by the lag in demand from some of the smaller jobbing plants and by the drop in buying here by interests at distant points. Sellers report no difficulty in peddling complete current output. The only idle furnace in the area is expected to be relighted before the end of the month.

Pittsburgh—Merchant iron demand continues firm in this area. Most foundrymen say their receipts are adequate, but many could use more than is being received. Defense castings are strong despite the recent cutbacks in consumer business. All blast furnaces are going strong with the exception of one unit at Bethlehem's Johnstown, Pa., plant and the No. 4 stack at U. S. Steel's Edgar Thompson Works.

Cincinnati—The foundry melt on light castings for consumer goods is lighter, as reflected in lessening pressure on furnace interests. Southern iron supply is no greater despite cutbacks in soil pipe. Demand for northern iron for machine tools is up. Oven foundry coke continues in ample supply.

Birmingham—Merchant iron production has been increased by addition of the new stack at Woodward. Little change is seen in the general supply situation since considerable demand remains unsatisfied.

Manganese Ore . . .

Washington—Supply of manganese ore improved late last year, shipments from domestic mines having recovered from the effects of the August-September work stoppages at western metal mines. Domestic mine shipments increased to 9200 tons in October from 6300 in September while imports of ore increased to 181,060 tons from 149,926 tons and those of ferromanganese to 19,500 tons from 13,800. Net supply in October was 208,586 tons against 169,246 in the preceding month.

In addition to the 9200 tons of

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high-grade ore, 104,979 tons of manganiferous and ferruginous ore containing 5 to 35 per cent manganese were shipped in October from domestic mines. Minnesota was the principal producer of the lower-grade material, accounting for 93 per cent of the total.

Tubular Goods . . .

Tubular Goods Prices, Page 107

Seattle—Renewed activity in the cast iron pipe market is expected in February. Local agency is receiving shipments from United States Pipe & Foundry Co.'s new San Francisco plant, filling previous orders.

Scrap . . .

Scrap Prices, Page 110

Pittsburgh—Scrap supply situation remains critical. Steelmakers hope the mild weather continues which last week brought a better supply of scrap to dealers' yards. Production losses are currently slightly over 1000 tons daily in the area due to U. S. Steel's curtailment of operations at five different open hearths each day. If winter returns in its fury, other producers will definitely have to cut their steel production. Some observers see the current shortage remaining with us for the next 15 years or more due to the depression of the thirties and the subsequent wars which have depleted our potential scrap supply. Several district plants have less than a day's supply while others are in a slightly better position. Some operators think the only concrete answer to the problem is the quick erection of new blast furnaces strategically located throughout the nation.

Detroit—One of the area's largest mills characterizes the scrap situation as "very bad," and says its stocks have dropped to less than one week's supply. This situation does not apply to all mills here. Another of the larger mills is prevented by NPA from taking in any scrap until it holds only 10 days' supply, a point which has not yet been reached. Improvement in weather, it is hoped, will free enough snow-bound scrap to allow operations to be maintained at their high level. One cause of the fairly sudden deterioration of this area's scrap position is the evaporation of conversion work which previously added considerably to the tonnage of home-scrap for local mills.

Boston—Intake of automobile scrap has declined, partly due to weather conditions. General opinion is that flow or auto scrap will eventually take a lot of checking under government regulations as to inventories and wreckers' shipments against intake of old cars for wrecking. Demand for steel grades far exceeds supply and most consumers' meager inventories are declining. Foundry cast grades are slow. Yard operations are hampered by lack of tonnage for processing; despite relatively high prices paid for unprepared material.

New York—High prices paid for unprepared scrap would indicate ceiling prices on steel grades, including No. 1 bundles, officially $38.42 northern New Jersey, are under severe strain. Upgrading rumors are also rampant. Yard inventories are down in relation to heavy demand and dealers are hard pressed to meet allocations. Allocations produce no additional scrap, but merely channel distribution of tonnage available. Cast grades are in ample supply and some sales below ceilings are reported. OPS ceilings contribute to price strength in cast grades.

Buffalo—Scrap is moving into local yards in fairly substantial quantities, shipments being spurred by warm, clear weather. No additional allocation orders were received last week. Softness of cast iron grades continues to feature the market pricewise.

Philadelphia—Another batch of allocations for steel scrap for shipment to eastern mills has been slapped on dealers, most having completed shipments against previous tonnage. Inventories with eastern steel mills are dangerously low in some cases with about one week's supply on hand. Foundries are well supplied with cast grades, but steel mills could use more in suitable grades. More stripped motor blocks are appearing. Substantial ratio of No. 1 bundles, $40.37 f.o.b., based on $2.13 rate to Conshohocken, Pa., are moving as electric furnace material with the higher differential for that grade paid.

Cincinnati—Mills are entering a critical scrap supply period. Inventories are so low the mills are on a hand-to-mouth basis. Most shipments are on an allocation basis reducing the tonnage on the "free" market. So far no open hearths have been idled by lack of scrap. Poorer grades of cast are easily obtainable.

Chicago—Except for the three Gary open hearths which U. S. Steel Co. idled for want of scrap, steelmaking operations are maintained at a high level. Melting of the heavy snow and warmer weather enabled scrap yards to step up operations. Volume of incoming material is subnormal and a continuing scrap shortage is anticipated because of increasing demand arising from new productive facilities to be brought in. Blast furnace and foundry grades of scrap remain comparatively easy.

St. Louis—A break in the weather has improved scrap shipments moderately, especially arrival of railroad cars delayed en route. Optimism of mills, down to 1 to 2-week stockpiles is tempered, however, by the likelihood a good portion of it will be diverted by directive to other districts. A sharp cut in pig iron production has put new pressure on scrap supplies here.

Birmingham — One Birmingham scrap broker received some free steel last week, indicating considerable easing in Republic Steel Corp.'s supply situation. Cast grades are considerably more plentiful due largely to recent strikes in the cast iron pipe industry and the part time operations of pressure pipe plants.

San Francisco—Scrap deliveries are steady and small. Inventories remain about the same. Small shipments continue to come in from the Pacific.

Los Angeles—Undertone of foundry scrap market is weaker. Sales of No. 1 cupola cast sold at prices rang-

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ing from $47 to $50, which are below ceilings. Directives are taking largest share of dealers' steelmaking scrap.

Seattle—Scrap receipts are slower due to severe weather conditions in the interior. Shipments last week were less than consumption, but mills maintain peak operations by drawing heavily on inventories. The supply situation is critical.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 107

Los Angeles—Important factor in easing western coke shortage in 1951 was 1 million tons of coke produced by 266 ovens of Colorado Fuel & Iron Corp., Pueblo, Colo., mill. More than 20 per cent was shipped to the trade.

Warehouse . . .

Warehouse Prices, Page 109

New York—Compilation of warehouse steel prices on a monthly basis is difficult because a variety of prices prevail for some products. Continued strong demand for most items operates against leveling off at lowest plane. Distributors are getting what they ask under the warehouse regulation, although differentials are rarely more than $2 a ton. Starting this month, warehouses are allocated 100 percent of base period tonnage. While this increase ultimately will mean more steel from mills, little additional volume has come in thus far. Actually, considerable fourth-quarter tonnage is still owed distributors.

Pittsburgh—Majority of warehouses report a steady improvement in stocks. Incoming receipts from mills are good. Some of the recent pressure has eased due to cutbacks in consumer durable fields. Items still in tight supply include plates, cold-rolled bars and most of the common structural shapes. Operators are looking for an active year, if the steel strike threat is erased.

Cincinnati—Better warehouse stocks of cold-rolled sheets is not matched in large rounds, structurals, angles and some other items. Jobbers are still awaiting mill shipments on fourth quarter allotments. Demand is sustained at high level.

Chicago—Demand on warehouses for steel products lumps heavier than current inventories will accommodate. Narrow and unbalanced stocks complicate efficient customer servicing. On the other hand, there are a few straws in the wind to indicate lessening pressure for steel supplies ahead. Some consumers have used up their CMP tickets and can't make further acquisitions; others are unable to cash mill tickets and for want of this tonnage are obliged to reduce their purchase of miscellaneous and complementing materials from warehouses. Warehouses report greatest tightness in plates, cold-finished bars, structurals and heavy hot-rolled sheets. Cold-rolled sheets have eased noticeably.

Birmingham—Some improvement in warehouse stocks is noted here, although disappointment is expressed in some quarters over slow allocations. Shipments remain as heavy as available stocks will permit.

Los Angeles—Inquiries are depressed and the "heat is off" on fabricators' demands for steel. CPR 98 has resulted in lack of uniformity in warehouse prices but minimum prices generally apply.

San Francisco—Prices vary within a limited range from warehouse to warehouse, owing to different ceilings created through transportation calculations. In some cases, ceilings are not necessarily the selling prices as competition is gaining on some items and concessions are being made. However, steel is where you find it and the little difference in prices has not upset market conditions noticeably.

Seattle—Jobbers report demand was slower in the last six weeks and supply of some stock items has improved. Inclement weather and holidays adversely affected buying. CPR 98 is commended by warehousemen as having a salutary effect on conditions affecting their business and is credited with wiping out gray market operations. Price schedules are being adjusted as new competitive conditions arise.

Rails, Cars . . .

Track Material Prices, Page 105

New York—Rail allotments for second quarter are higher, amounting to 363,000 tons compared with 300,000 tons in the first quarter. Steel for 2000 domestic tank cars is authorized, duplicating first quarter allotments, but second-quarter allocations for other railroad equipment are lower.

World Nickel Quotas Set

United States is permitted to purchase 7388.3 metric tons of primary nickel for importation this month. This provisional quota was established by the Manganese-Nickel-Cobalt Committee of the International Metalerials Conference. All marketable forms of primary nickel fall within the allocation program, including some elements which were not allocated last year, namely: Ferronickel, nickel cast iron and mattes used directly by consumers of nickel. Nickel salts, which were under allocation in the fourth quarter, are excluded from the new arrangement. Allocation of sales for export in January included 7150 tons from Canada, 933.7 tons from Norway, 393.5 tons from the United Kingdom, and 10 tons from the Federal Republic of Germany for shipment to Finland.

Naisuler Heads Extruders

Aaron J. Naisuler of National Store Fronts Co. and Northeast Aluminum in Boston was re-elected president of Aluminum Extruders Council. This organization represents aluminum fabricators and is in constant touch with NPA and Defense Department to assure total co-operation of the aluminum industry in the war effort.

Also re-elected to executive positions of the council are: Leon S. Friedman, National Aluminum Co., Columbus, O., secretary; Phillip Lemelman, Boston, general counsel. New members elected are: Paul V. Mathias, Bristol Aluminum Co., Bristol, Pa., vice president; Isadore Himmel, Himmel Bros. Co., Hamden, Conn., treasurer.

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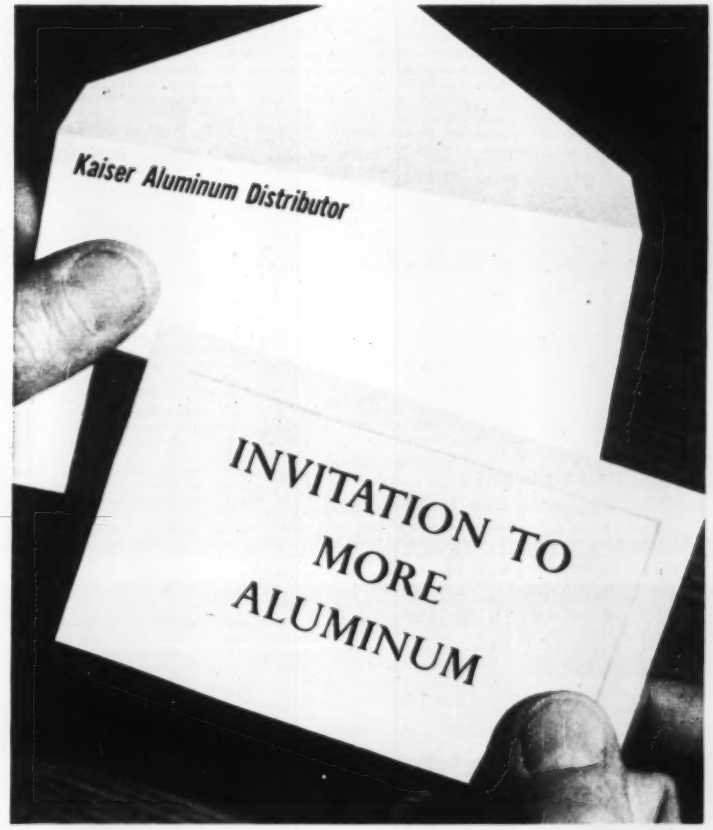

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STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

22,000 tons, subway section 11de, Pitkin avenue, Brooklyn, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.; Cayuga Construction Co., New York, general contractor.

15,000 tons, South street bridge-elevated connection, New York, to Bethlehem Steel Co.

6975, warehouses, Tobyhanna, Pa., U. S. Corps of Engineers; 3350 tons, Schact Steel Construction Co., Hillside, N. J., and 3625 tons, Simon Holland & Son, Brooklyn, N. Y.

3840 tons, galvanized transmission towers, for Bonneville Power Administration, to Bethlehem Pacific Coast Steel Corp., Seattle, low $1,063,421.

1200 tons, state highway bridges, Bucks county, Pennsylvania, to Phoenix Bridge Co., Phoenixville, Pa.

1000 tons (estimated), stop logs, draft tubes, etc., McNary dam, to Gunderson Bros. Engineering Co., Portland, Oreg., low $632,142 to U. S. Engineer, Walla Walla, Wash.

900 tons, power plant, hospital, Central Islip, Long Island, New York, to Grand Iron Works, New York.

680 tons, melt plant, scrap yard craneway, etc., for Seidelhuber Steel Rolling Mills, Seattle, to Leckenby Structural Steel Co., Seattle.

500 tons, state highway bridge, route 44, Salem county, New Jersey, to Bethlehem Steel Co.

300 tons, penstock gates, guides, etc., Lookout Point dam, to Philips & Davis Inc., Kenton, O., low $145,986 to U. S. Engineer, Portland, Oreg.

265 tons, relocation, transmission towers, Schuylkill expressway, Philadelphia, Electric Co., Philadelphia, to Bethlehem Steel Co.

250 tons, galvanized transmission towers, for Bonneville Power Administration, Portland, Oreg., to Flint Steel Corp., Tulsa, Okla.

135 tons, storehouse-repair shop, Pennsylvania railroad, Philadelphia, to Bethlehem Steel Co.

130 tons, state highway bridge, Montgomery county, Maryland, to Bethlehem Steel Co.

100 tons plus, including castings, etc., penstock gate hoists, etc., Lookout Point dam, Oregon, to Berger Engineering Co., Seattle, low $94,500 to U. S. Engineer, Portland, Oreg.

STRUCTURAL STEEL PENDING

1000 tons plus, power house, control house, etc., Chief Joseph dam; bids to U. S. Engineer, Seattle, probably in March.

460 tons, auto maintenance facilities, Elmendorf air field, Alaska; Denali Construction Co., Anchorage, Alaska, apparently low $2,105,000 to U. S. Engineer (involves also 50 tons reinforcing).

Unstated, wheel gates, etc., Eklutna power project, Alaska; bids to Denver, Jan. 31.

Unstated, control tower, McChord air field, Washington state; bids to U. S. Engineer, Seattle, about Feb. 13.

Unstated, intake-outlet structures, Lucky Peak dam; general contract to Hunt & Willette Inc., Wenatchee, Wash., low $396,610 to U. S. Engineer, Walla Walla, Wash.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1000 tons, Boeing engineering office building, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; Strand & Son, Seattle, general contractors, low $3,215,384.

310 tons, state highway bridge, Bucks county, Pennsylvania, to Bethlehem Steel Co.; Harry C. Erb Inc., Bala, Pa., general contractor.

REINFORCING BARS PENDING

425 tons, substructure bridge, Hackensack river, route 25, Jersey City-Kearny, N. J., bids Jan. 29, Trenton; also 20,300 feet, 14-inch, steel bearing piles.

130 tons, Washington state highway project, Pacific county, Hawkins & Armstrong, Seattle, low $190,042.

50 tons, also miscellaneous steel, government-furnished, five bridges, etc., Mt. Baker national park, Washington state; bids to Bureau of Public Roads, Portland, Oreg., Jan. 24.

Unstated, rectifier building, Seattle light department; bids in Jan. 16.

PLATES . . .

PLATES PLACED

6200 tons, sheet steel and T-section piling, cofferdam, The Dalles, Oreg., power project, 3100 tons each to Inland Steel Co., Chicago, and Columbia Steel Co., Portland, Oreg.; cofferdam bids to U. S. Engineer, Portland, Jan. 22 (piling delivery by Dec. 31, 1952).

100 tons, also shapes, pipeline pontoons for U. S. Engineer, Portland, Oreg., to Beall Pipe & Tank Co., Portland, low $23,130.

PLATES PENDING

200 tons, government-furnished sheet steel piling, McNary dam fishway; Guy F. Atkinson Co., low to U. S. Engineer, Walla Walla, $236,693.

Unstated, steel piling, berthing facilities, bulkheads etc., for Port of Portland, Portland, Oreg.; Guy F. Atkinson Co., San Francisco, low, $167,000.

Unstated, 250,000-gal elevated steel tank, Larsen air field; bids to U. S. Engineer, Walla Walla, Feb. 19.

RAILS, CARS . . .

RAILROAD CARS PLACED

Army Transportation Corps, 2000 box cars, 681 low side gondolas, 617 flat cars, to Pressed Steel Car Co.'s Mt. Vernon, Ill., shop.

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CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Refractory Handbook Issued

Men who live on facts will find plenty in a booklet issued by Ironton Fire Brick Co., Ironton, O. It contains tabulations and formulas for making calculations that will prove helpful to engineers and maintenance supervisors who build, repair or reline furnaces.

Under the title "*Ironton Handy Data for Users of Refractories*," the booklet lists standard series fire brick, cupola blocks, wedge, key, arch and circle brick. Unit dimensions and quantities required to turn a circle are given, together with guides for estimating solid straight wall construction. Other tables give the circumferences and areas of circles from $\frac{1}{4}$-inch up to 100 inches in diameter. It also contains a table of temperature end points of pyrometric cones, a practical conversion of cone numbers into degrees fahrenheit and centigrade.

Weir Kilby Boosts Capacity

Weir Kilby Corp., Birmingham, plans to expand its production facilities by 20 per cent. Floor space will be increased by 5500 square feet and additional equipment will be installed. Weir Kilby, an affiliate of Taylor-Wharton Iron & Steel Co., Cincinnati, produces frogs, switches, rail guards and other track accessories. Howard Van Syckle is manager of the Birmingham plant.

Calabama To Build Plant

Plans for construction of a plant by Calabama Chemical Co., Huntsville, Ala., were announced by Benton H. Wilcoxon, vice president. Cost of the project is estimated at $500,000.

Decorated Metal Mfg. Moves

Decorated Metal Mfg. Co. Inc., Brooklyn, N. Y., transferred its plant and office to Washington avenue, Milltown, N. J. The company manufactures metal bobbins for the nylon, silk and rayon industries; spools and containers for adhesive and industrial tapes, solder wire, asbestos and typewriter ribbons.

Luscombe Airplane Expands

A $450,000 building program, to add 85,000 square feet of floor space to Luscombe Airplane Corp.'s facilities, Dallas, was announced by H. L. Howard, president. Construction is scheduled for completion by July 1. The project includes additions to main buildings, a paint shop, foundry, maintenance and office buildings.

Fahralloy Revises Pricing

Users of solution pots for heat-treating of parts in salt, cyanide, or molten lead can predetermine now the cost of pots on a per unit basis, says Fahralloy Co., Harvey, Ill. The new policy, which eliminates buying pots by the pound, also will supply users with a more accurate cost picture of needs, as well as expediting delivery. All Fahralloy pots are made of cast chromium-nickel alloys and are available in several grades of alloy.

Fastener Maker To Move

Northwest Bolt & Nut Co., Seattle, will move to a new plant at Eighth avenue and 42nd street later in the year. The new site is adjacent to Northwest Steel Rolling Mills Inc. Revival of wood ship building in the Northwest has stimulated demand for nuts, bolts and similar items.

Opens Tool Steel Warehouse

Columbia Tool Steel Co., Chicago Heights, Ill., moved into its new branch warehouse at 4832 S. Kedzie Ave., Chicago 32. It stocks about 2000 items of standard types of tool steel and the facilities include a battery of equipment that can be used for cutting the many grades of tool steel stocked. Richard W. Miller, vice president of the company, is in charge.

Agent To Handle Cylinders

Hanna Engineering Works, Chicago, appointed Power Transmission Products Division, Portland Iron Works, Portland, Oreg., as distributor for its pneumatic and hydraulic cylinders and valves. Guy B. Arthur is sales manager of Power Transmission Products.

National Electric Products

National Electric Products Corp., Pittsburgh, is transferring operations previously carried on by its Philadelphia warehouse to its recently acquired manufacturing plant in Linden, N. J. The company's Philadelphia sales office moved to Architects Bldg., 17th and Sansom streets. Lloyd Clark is district manager. In the new Linden plant, National Electric will manufacture rigid conduit, armored cable, boxes, connectors, busway and many

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Production problem:

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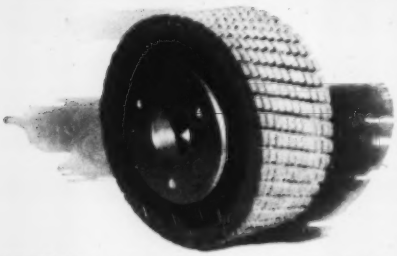
1 Here's what Century Electric Company, Saint Louis, Missouri, did. They turned their weld-removal problem over to a 3M Methods Engineer, who studied the problem with Century Electric specialists and came up with a solution.



2 3M's recommendation was a conversion to backstand equipment with fast-cutting abrasive belts. A specially engineered contact wheel was recommended—plus the right abrasive belt, grit size, and operating speed.

3 Now Century Electric uses the 3M Method to finish stator shells 800% faster than with the previous equipment. Production has jumped from 15 to 125 pieces per hour with smoother finishes too!

4 3M maintains Demonstration Rooms in principal cities throughout the country, where abrasive engineers will demonstrate how you can cut *your* grinding and finishing costs. For additional information on the 3M Method, write for a copy of the "Step UP Production" booklet, Dept. S 12, Minnesota Mining and Manufacturing Co., St. Paul 6, Minnesota.

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See 3M Company's TV Program "JUVENILE JURY" on NBC Network

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other items. The company will retain its original plant and manufacturing facilities in Ambridge, Pa., as well as its large plant in Torrance, Calif.

Irving Gets Grating Order

Construction of Consolidated Edison's Astoria generating plant will call for one of the larger installations of open-mesh steel grating in a power plant. Irving Subway Grating Co., Long Island City, N. Y., will produce some 100,000 square feet of grating for use as walkways and platforms in this plant.

Monsanto To Build in South

Monsanto Chemical Co., St. Louis, purchased equipment for a complete chlorine plant from Dr. Ing Oronzio de Nora, Milan, Italy, and will place the installation at Anniston, Ala.

Klemp Plans More Expansion

William F. Klemp Co., Chicago, completed a $300,000 expansion program, including the addition of 50 per cent extra floor space at its Chicago plant, plus new forge welded grating assembly line. This large producer of open steel meshes plans another expansion this year to cost about $500,000.

Ravenna Arsenal Restored

Job of rehabilitating the Ravenna, O., arsenal has been completed at a cost of about $3.4 million, or about $1 million less than originally estimated. The arsenal, which cost about $75 million to build just before World War II, is operated under contract by Ravenna Arsenal Inc. The plant is loading shells and renovating ammunition.

Forms Canadian Metal Firm

Frankel Corp. Ltd., Toronto, and American Smelting & Refining Co., New York, incorporated Federated Metals Canada Ltd. This jointly-owned company acquired and operated the business of dealing in nonferrous metals and the smelting and manufacturing of nonferrous metal alloys heretofore carried on by National Metal Co. Division, Frankel Corp. Ltd. Address of the new company is E. Don Roadway at Eastern avenue, Toronto.

B S & B Opens Branch Office

Black, Sivalls & Bryson Inc., Kansas City, Mo., opened a second California sales office at San Francisco. A Los Angeles office was opened recently. Ross Baze, West Coast sales manager, Los Angeles, will be in charge of the San Francisco office, assisted locally by Warren J. May, sales engineer. The company produces oil field equipment, pressure vessels, safety devices, etc.

THE HEAT'S ON: Novel method of de-icing the 525 switches on 62 miles of railroad track at Republic Steel Corp.'s Canton and Massillon, O., plants was devised by Clyde LeBeau and his transportation crew. Flame throwers, mounted on boxcars, open a frozen switch in less than five minutes compared with 30 minutes when opened by hand.

Opens West Coast Office

Detroit Steel Products Co., manufacturer of Fenestra windows, doors and building panels, established office and warehouse facilities at 5026 E. Slauson, Los Angeles, to serve Arizona, California and Nevada.

Flexrock Appoints Agent

Mechanical Rod Packing and Building Maintenance Divisions, Flexrock Co., Philadelphia, appointed Hinds & Associates Inc., Kansas City, Mo., as their representative in Kansas, Nebraska, Oklahoma, Arkansas and western Missouri.

Computer Research Moves

Computer Research Corp. moved to a new 22,000 square foot plant located at 3348 W. El Segundo Blvd., Hawthorne, Calif. Electronic products will be manufactured.

Tool Maker Changes Name

Park Metalware Co. Inc., Orchard Park, N. Y., manufacturer of hand tools, changed its name to Xcelite Inc. F. Birney Farrington is president.

American Welding Expands

Effective Jan. 1, Warren Machine & Die Co. became the Warren Machine & Die Division of American Welding & Mfg. Co., Warren, O. William J. Sampson Jr. is president of American Welding. John W. Slavik, founder

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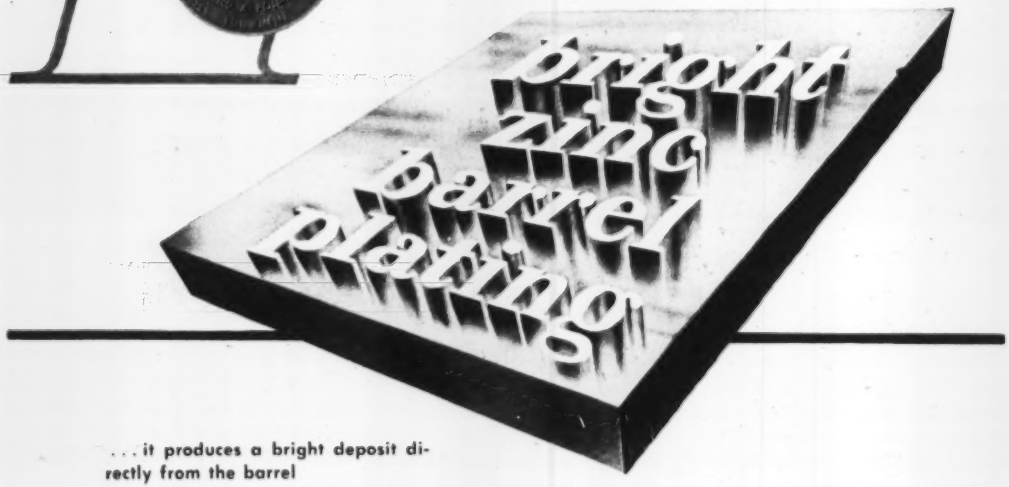

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INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

of Warren Machine in late 1946, renews his association with American Welding as manager of Machined Products Development, reporting to E. C. Fales, executive vice president.

Dow Forms Two Subsidiaries

Dow Chemical Co., Midland, Mich., organized two wholly-owned subsidiaries, Dow Chemical Inter-American Ltd. and Dow Chemical International Ltd. The former will handle the parent company's business affairs in Mexico, Central and South America and the West Indies; the latter, in Europe, Asia, Africa and Australia. Among other activities, they will take over the functions of Dow's present export sales department. Clayton S. Shoemaker is president of the subsidiary companies; Howard R. Ball, sales manager; William R. Clulo, treasurer and assistant secretary.

Justrite Metal Buys Plant

Justrite Metal Products Inc., Jamestown, N. Y., purchased the former Matthews Tire & Tread Co. plant in Falconer, N. Y. Justrite, which is manufacturing airplane parts, had leased the Falconer property for the last eight months.

Black & Decker Opens Office

Black & Decker Mfg. Co., Towson, Md., moved its Los Angeles branch to 2432 S. Broadway. Waldo E. Bair is the branch manager. R. A. Lomas, service engineer, has facilities for prompt repair to meet the growing use of the company's tools in southern California, Arizona and southern Nevada.

Industrial Wire Moves

Industrial Wire Products Corp., Los Angeles and San Francisco, moved the main office to 5647 Alhambra Ave., Los Angeles. The firm specializes in straightening, cutting and braiding all types of wire.

Metal Hydrides Inc. Expands

Metal Hydrides Inc., Beverly, Mass., completed a $25,000 expansion program for increased production of lithium aluminum hydride, lithium borohydride, sodium hydride and sodium borohydride. The company anticipates substantial price reductions in these products as a result of large scale commercial production.

Besly Firm Changes Name

Charles H. Besly & Co. changed its corporate title to Besly-Welles Corp. on Jan. 1. No change in personnel or production facilities are involved. The company's operations will include manufacture of taps, grinders, drills, reamers and abrasive wheels. Besly-Welles executive headquarters and Besly-Titan Abrasives Division sales offices are at 20 N. Wacker Dr. while the Besly-Welles Cutting Tool Division maintains offices at 184 N. Wacker Dr., Chicago. National sales are handled from the company's plant at Beloit, Wis.

Graham-Mintel Names Agent

Graham-Mintel Instrument Co., Cleveland, appointed Harry R. Berkshire as representative to handle its electronic gaging equipment throughout greater New York and adjacent territory. Mr. Berkshire's headquarters are at 428 Tenafly Rd., Tenafly, N. J.

Pennsalt Plans Expansion

Pennsylvania Salt Mfg. Co., Philadelphia, will increase production capacity for synthetic anhydrous ammonia at its Wyandotte, Mich., Works by about 110 per cent. Cost of the project, to be completed early in 1953, is estimated at $2.2 million.

Mainten-Aire Corp. Formed

Mainten-Aire Corp., 11841 Sherman Way, North Hollywood, Calif., was organized under direction of J. Edwin Jones, president, and L. D. Ryerson, vice-president and manager, to process and assemble aircraft engine accessories and hydraulic components.

Will Reopen Indiana Plant

Pittsburgh Plate Glass Co., Pittsburgh, plans to purchase a three-year old factory at Shelbyville, Ind., as a manufacturing facility for its Fiber Glass Division. The plant contains 147,000 square feet of floor space and was formerly owned and operated by National Farm Machinery Cooperative Inc.

Plans $43 Million Refinery

Richfield Oil Co., 555 So. Flower St., Los Angeles, received a $43,107,000 Certificate of Necessity from the Defense Production Administration for refining facilities for the production of aviation gasoline.

Extends Kingsbury Contract

Contract for operation of the Kingsbury ordnance plant at La Porte, Ind., by American Safety Razor-Kingsbury Corp. was extended until Apr. 10, 1953. The company will be paid a flat, fixed amount for its management services. The Kingsbury corporation is a subsidiary of American Safety Razor Corp., Brooklyn, N. Y. The plant was built by the government in 1940 at a cost of $53 million.

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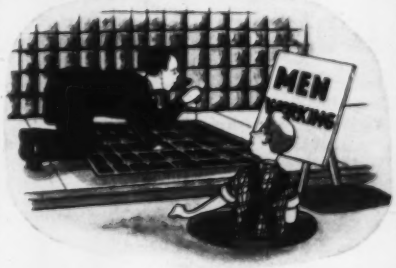

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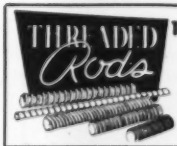

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For employment with a large midwestern plant specializing in the fabrication of steel, steel alloys, and aluminum products in connection with process plants and other equipment for the gas, petroleum and chemical industries. Must be capable of assisting in the administration of sales activities involving promotional sales work, customer contacts, selling, preparation of production orders and general coordination of distribution policies with sales manager. Man with chemical engineering background preferred between the age of 35/45 who has customer contacts in the fabricating and processing field and who has the sales qualifications for dealing with people and coordinating the efforts of a sales organization. This position offers possible advancement to general sales manager.
Write giving background, personal data, and salary requirement—Box 428, STEEL, Penton Bldg., Cleveland 13, Ohio.

DISTRICT SALES MANAGER
Steel warehouse in Jersey City, N. J., servicing Eastern area. Must be thoroughly experienced in the sale and warehousing of flat rolled and allied products. Permanent connection with progressive organization. Salary commensurate with experience. Submit detailed resume. All replies strictly confidential. Our personnel know of this advertisement. Write Box 423, STEEL, Penton Bldg., Cleveland 13, O.

SALES ENGINEER
For large concern in construction field. Must have degree in Civil Engineering and experience contacting engineers and contractors. Prefer native of Washington, D. C. or vicinity; position is located near Washington. This is an excellent proposition and only those qualified will be interviewed. Reply to Box 440, STEEL, Penton Bldg., Cleveland 13, O.

WANTED
New England steel warehouse interested in appointing SALES MANAGER with knowledge of sales and purchasing of sheet, strip, coil, bar and wire.
Salary open. All letters in strictest confidence. Our employes know about this ad.
Address Box 438,
STEEL, Penton Bldg., Cleveland 13, O.

METALLURGIST—Recent graduate with interest in Welding to work in metallurgical laboratory.
CHEMIST—Recent graduate or Experienced non-graduate to work in quantitative spectrography in metallurgical laboratory.
These and various other openings in technical fields are available at a new plant being established by prominent automotive concern near the Philadelphia area.
Reply Box 434, STEEL
Penton Building Cleveland 13, Ohio

GENERAL PLANT METALLURGIST WANTED with particular experience in wire rope for plant in eastern Canada. Reply giving complete record of experience, age, and references to Box 437, STEEL, Penton Bldg., Cleveland 13, Ohio.

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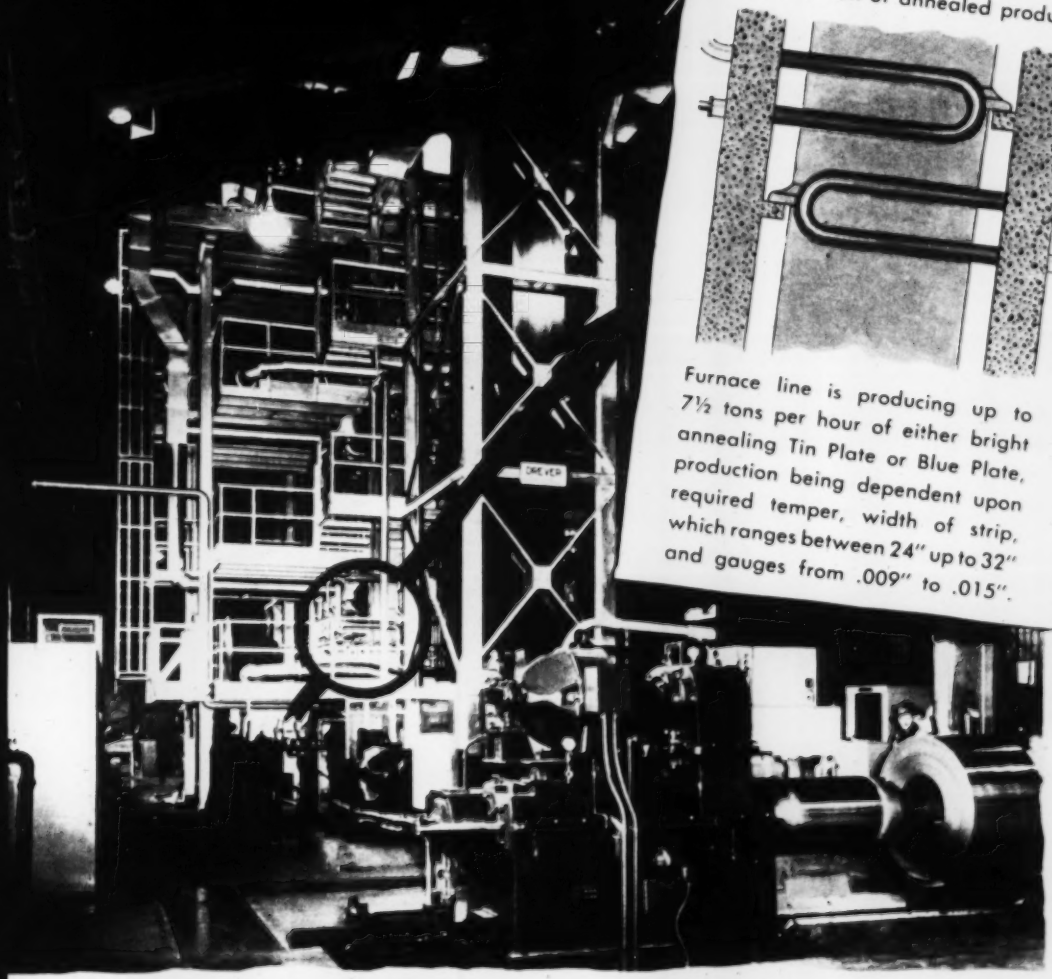
ILSON RADIANT TUBES HEAT THIS DREVER TOWER TYPE ANNEALER!

TUBES handle up to 175,000 BTU/hour input per tube operating at an average operating tube temperature of 1800 F giving an overall average economy of 1,000,000 BTU/ton of annealed product.

Furnace line is producing up to 7½ tons per hour of either bright annealing Tin Plate or Blue Plate, production being dependent upon required temper, width of strip, which ranges between 24" up to 32" and gauges from .009" to .015".



Lee Wilson ENGINEERING Co., Inc.

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Telephone ED-1-6600

BELL TYPE FURNACES ★ RADIANT TUBE HEATING ★ ANNEALING PROCESSES

Designed for 1½" armor plate, but successfully straightens 5" carbon steel

. . . with help of TIMKEN® bearings

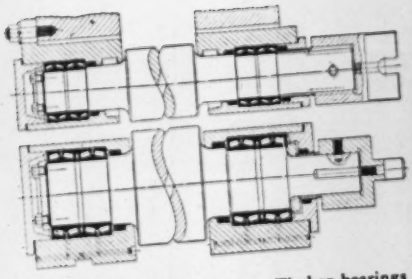
DESIGNED for 1½" armor plate, this giant 195-inch Mesta plate leveller has demonstrated its tremendous capacity by successfully straightening 5" carbon steel. One reason for this extra capacity: Timken® tapered roller bearings are used on the back-up rolls! These Timken bearings are 11" wide, with a 11.994" bore and 17.246" O.D. Each pair of back-up roll bearings take a separating force of 1,250,000 pounds. With 3 back-up rolls per work roll, the total separating force on six bearings is 3,750,000 pounds.

Because of line contact between Timken bearing rollers and races, there's load capacity to spare. And the rollers and races are case hardened to give a hard, wear-resistant surface combined with tough, shock-resistant cores.

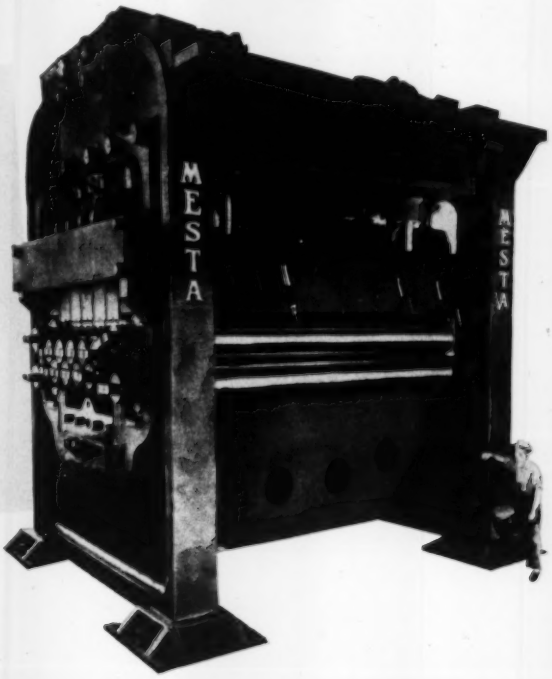
Timken bearings are made of Timken fine alloy steel—finest steel ever developed for tapered roller bearings. Their true rolling motion and incredibly smooth surface finish practically eliminate friction even under the heaviest loads.

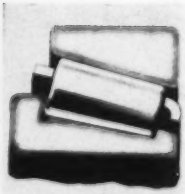
Timken bearings are now used on the back-up rolls of practically all makes of levellers. Make sure the bearings in the machine you build or buy are stamped with the trade-mark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



MESTA MACHINE COMPANY uses Timken bearings on back-up rolls, work rolls and pinch rolls of the plate leveller at right. Diagram shows work roll (top) and pinch roll (bottom) applications.





GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN

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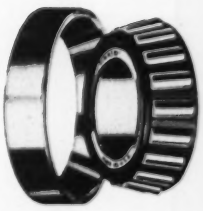
TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ○ AND THRUST ○ LOADS OR ANY COMBINATION ○